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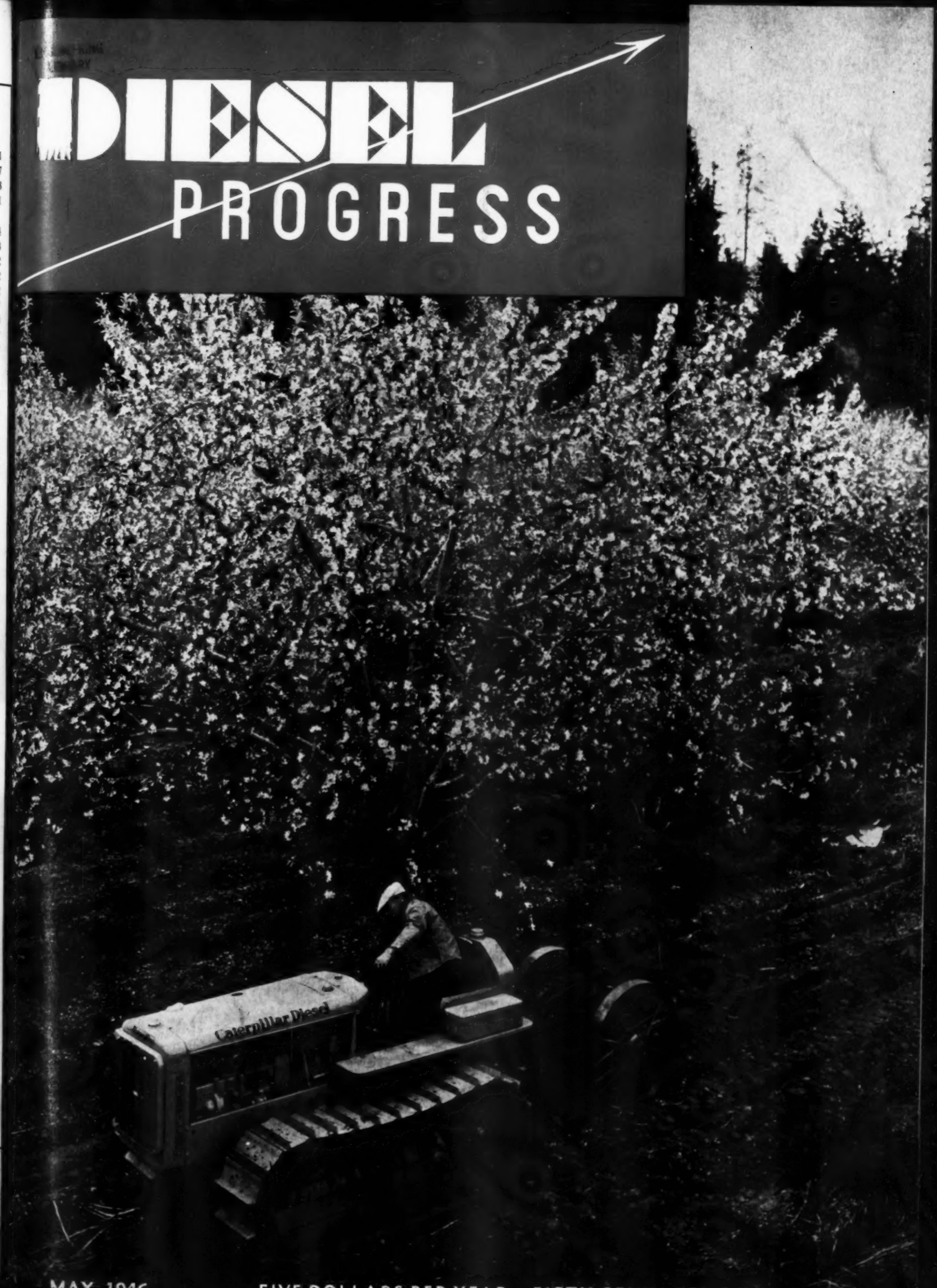
DIESEL PROGRESS



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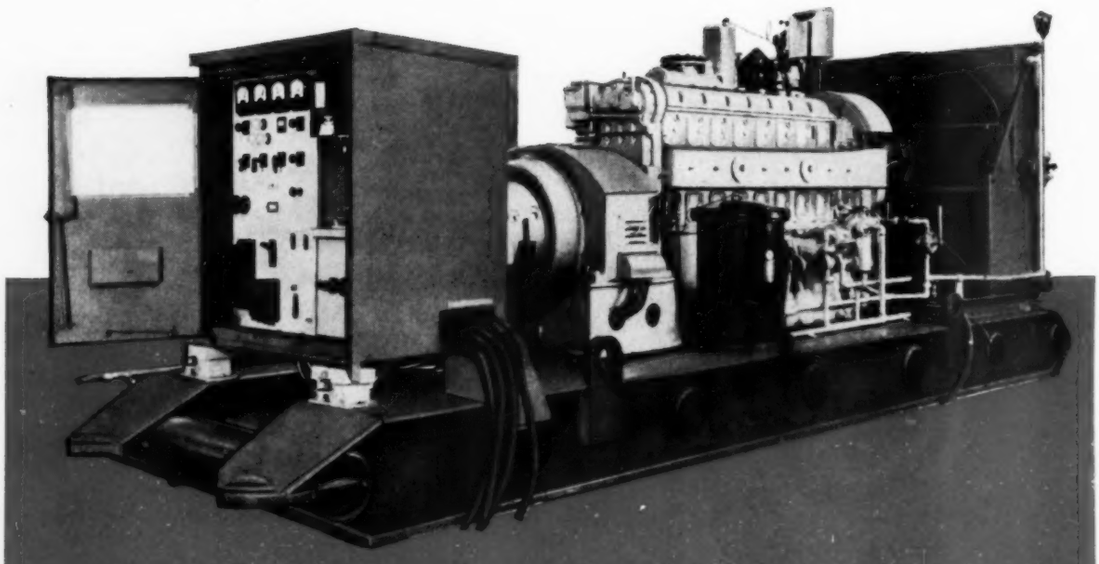

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DIESEL PROGRESS, for May, 1946. Volume XII, Number 5. DIESEL PROGRESS is published monthly by Diesel Engines, Inc., 2 W. Forty-fifth St., New York 19, N. Y. Rex W. Wadman, President. Acceptance under the Act of June 5, 1934, at East Stroudsburg, Pa., authorized March 27, 1940. Subscription rates: $5.00 per year, single copy, 50¢.

DIESEL and GAS ENGINE PROGRESS

ERIK W. WADMAN
Editor & Publisher

WILBUR YOUNG — *Managing Editor*
BRUCE C. KISSON — *Assistant Editor*
HAYWORTH CAMPBELL — *Art Director*

FRONT COVER ILLUSTRATION: Subsoil cultivation of an apple orchard near Monitor, Washington. The equipment is a Caterpillar Diesel tractor and Killefer subsoiler.

TABLE OF CONTENTS ILLUSTRATION: From the boards of Consolidated Shipbuilding Corporation, this modern, 60-ft., luxury yacht is designed for a pair of General Motors Diesels of 200 hp. each, driving twin screws.

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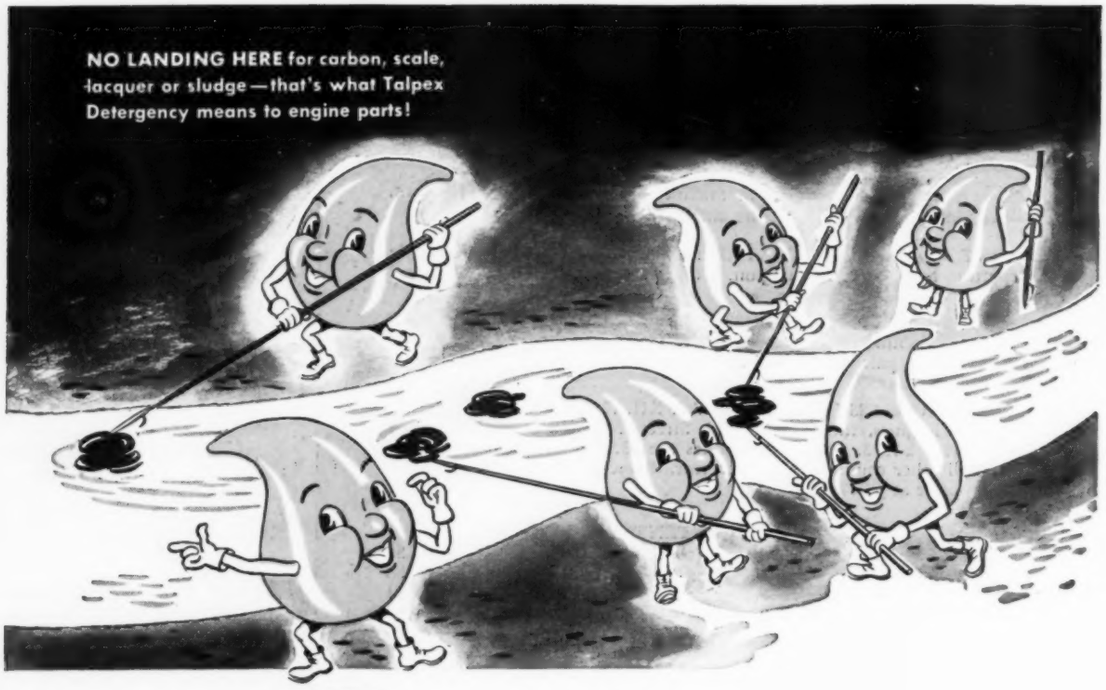
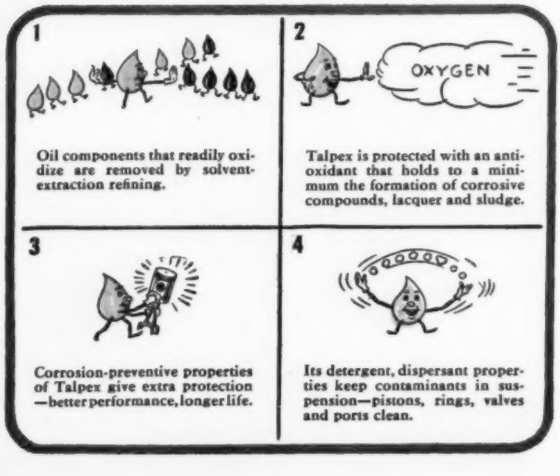


THESE FOUR *TALPEX* PERFORMANCE FACTORS SAFEGUARD HIGH-SPEED DIESELS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SHELL DIESEL LUBRICANTS

Caterpillar Diesel tractor with 4-row transplanter setting out guayule seedlings in the Salinas Valley, California.

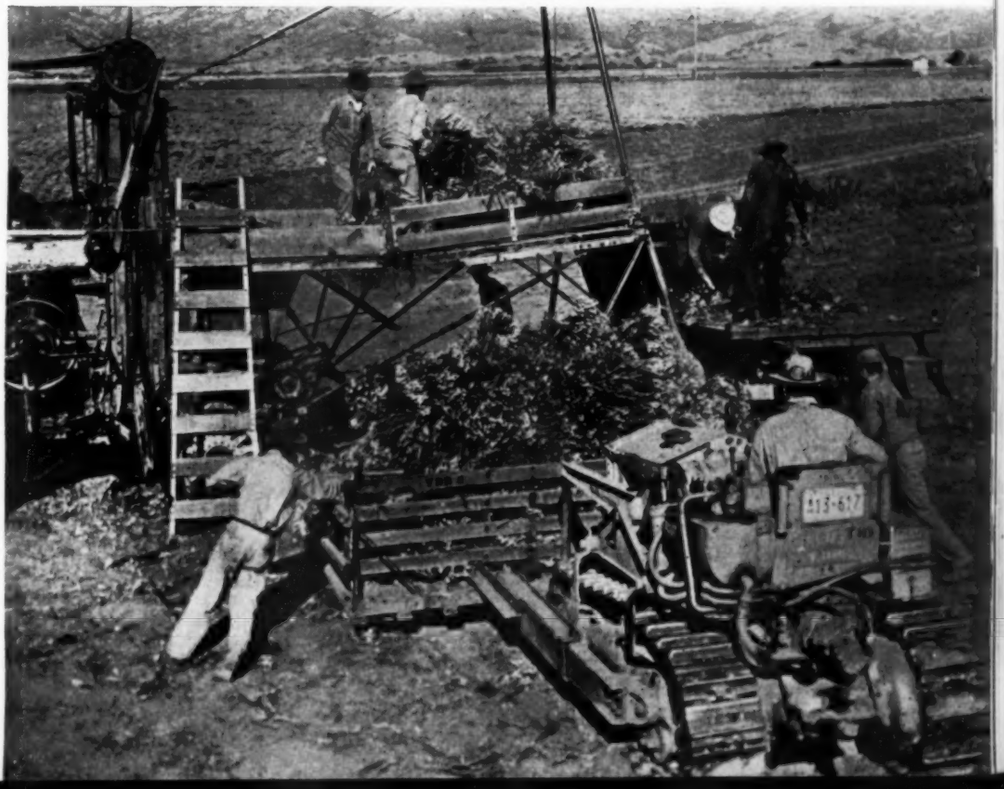
Handling 100 lb. blocks of natural rubber from guayule.

Diesel tractor brings guayule to field baler and Diesel trucks haul bales to the mill.

DIESELS PRODUCE NATURAL RUBBER

By DWIGHT ROBISON

FROM Mexico comes the guayule shrub, a featured crop in the Salinas Valley of California. Now in its eighth year of production, the mature plants produce 1200 to 1600 pounds of *natural* rubber per acre. In harvesting, the entire plant is uprooted by a Diesel tractor-drawn harvesting machine, cured three days in the open field, then moved by Diesel tractor equipment to mill receiving chopper. The plants are then mechanically dried, shredded, mixed with water and fed to pebble mills for grinding. The slurry finally emerges a tough sheet of *genuine* crude rubber. Pressed in hydraulic presses, its 100 lb. block is packed two to the carton and shipped where the man says they're still making shoes for the wobbly family bus. Diesel tractors, because of their economical operation and lasting qualities are again the field "mules" in this Western industry.



U. S. MARITIME SERVICE

EMPHASIZES DIESEL TRAINING AT SHEEPSHEAD BAY

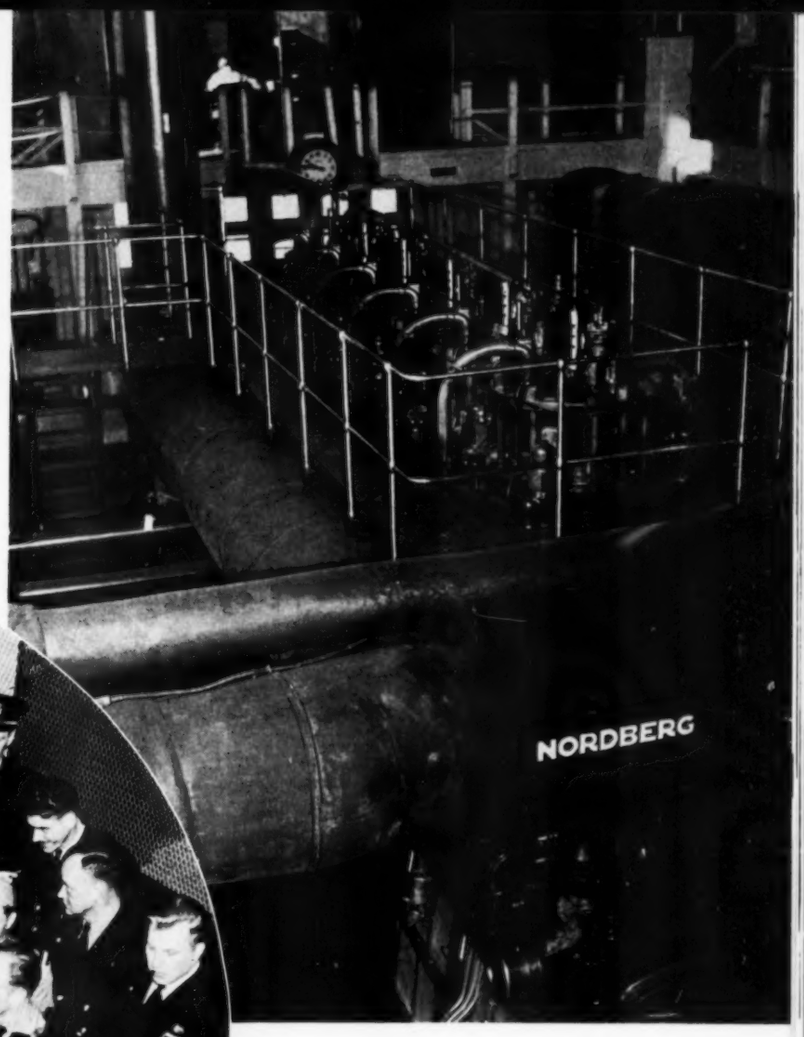
By BRUCE C. SISSON

EVERY two weeks a group of twenty to thirty Engineering Officers of the U. S. Maritime Service report to the U. S. Maritime Service Training Station at Sheepshead Bay for training in Diesel engines. These officers, many of them being licensed steam engineers, fresh from sea, are eager to learn the theory and operation of Diesel engines so that they may qualify for their Diesel engineering licenses and thus be eligible to serve on one of the new Diesel ships, the number of which is now rapidly increasing.

During the four weeks assigned for training, these officers are put through a comprehensive course designed to give them the necessary requirements for a Diesel Engineer's License and also to keep them abreast of the latest developments in the field of marine Diesel installations.

The physical set-up for the program is excellent, a far cry from the early hectic wartime system when trainees had to find their own way through the mists of Dieseldom. The first organized Diesel training program by the Maritime Service was instituted by the Nordberg Company when in 1943, it began three weeks courses at its Milwaukee plant. This program

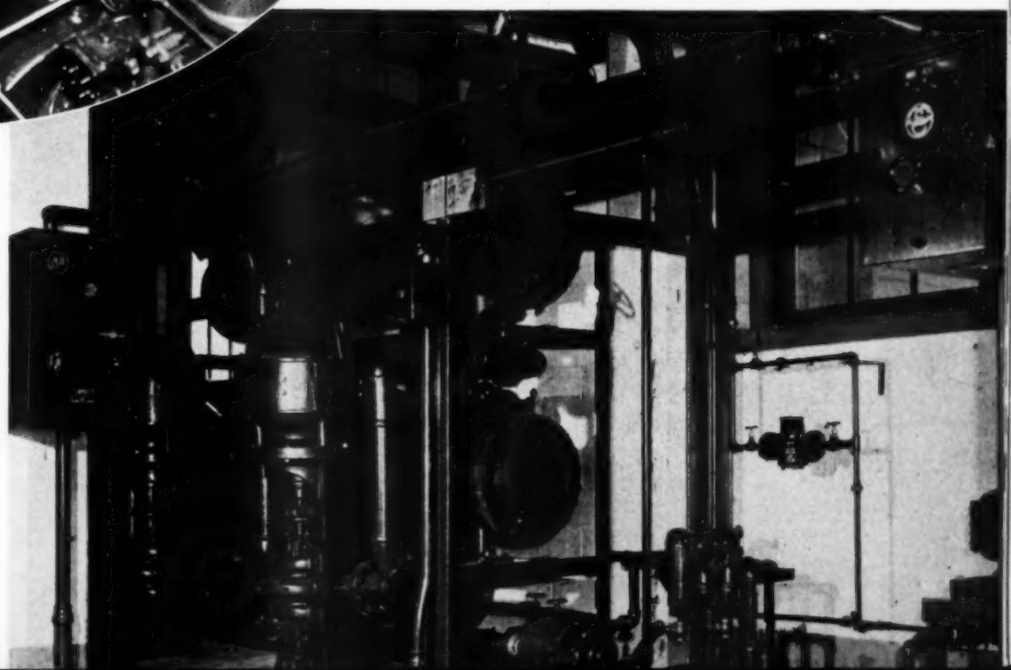
Captain G. E. Harrington, Superintendent of Sheepshead Bay Station watches operation with Commander J. R. Hickey, his Executive Officer (left).



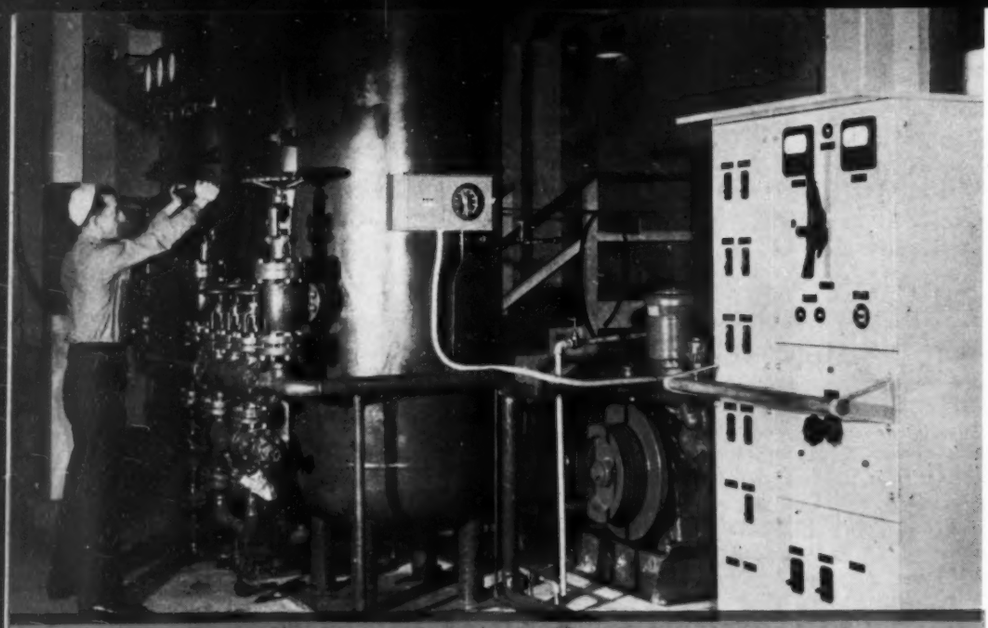
Looking down on 1700 hp. Nordberg Diesel installed at Sheepshead Bay power station.

Group of student officers gathered around the generator end of the 450 bhp. Baldwin Diesel.

Balco heat exchanger equipment for Diesel engines at power plant of U.S.M.S. Training Station.



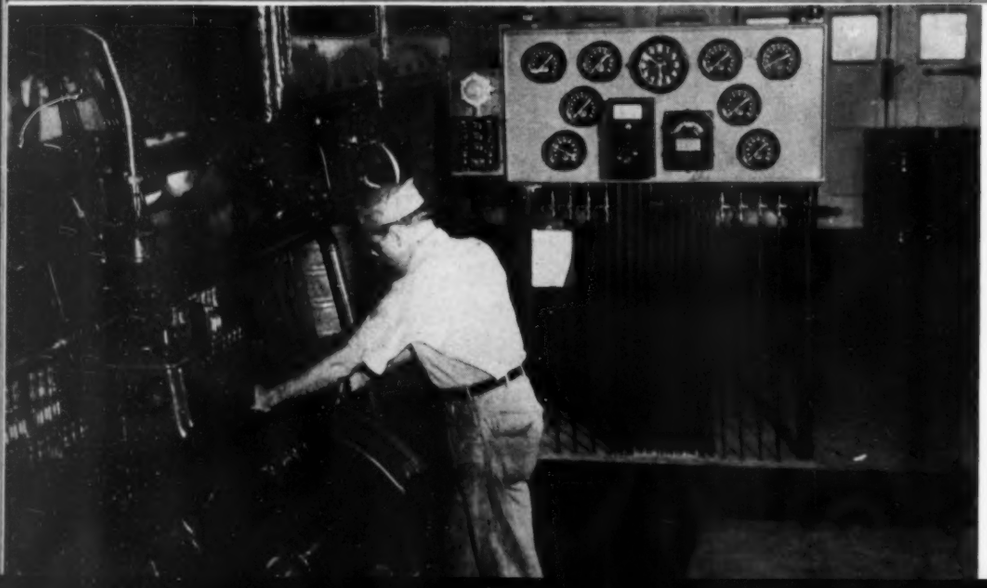
continued until 1944 when the Diesel ship *Cape Frio* was converted to a training ship and began to function as a floating laboratory for promising Diesel engineers. However, late in 1945 a Nordberg 2 cycle, 1700 hp., 180 rpm. Marine-Type Diesel Unit was installed at the Sheepshead Bay Station. The installation was made primarily for training purposes and was specially designed as a shipboard installation, with a Dynamatic brake installed to simulate the various power loads met in ship operation.



Air starting system for Diesels. Flywheel end of Ingersoll Rand compressor can be seen.

Dynamatic brake installation on the Nordberg Diesel, used to approximate actual shipboard operational loads.

Operator starting big Nordberg unit. Note Manzel lubricators at left of picture.



This new installation plus a Baldwin 6 cyl., 4 cycle, 450 bhp. generating unit, formed the integral equipment for a Diesel training school.

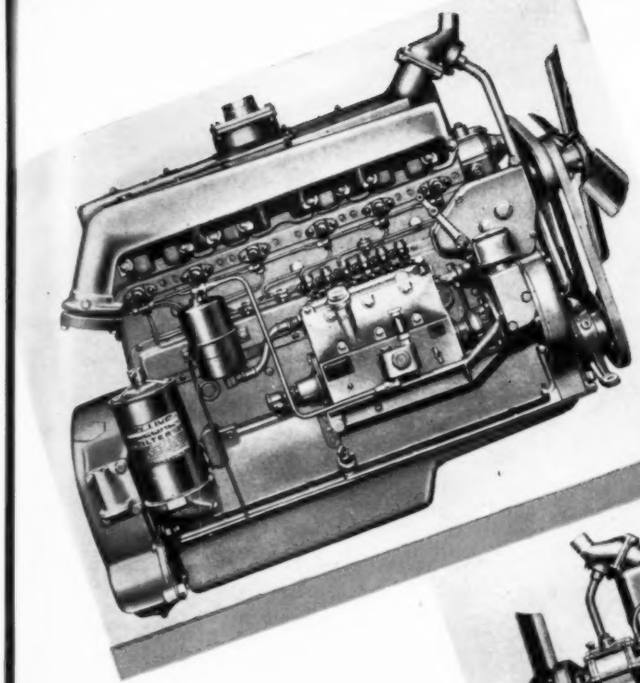
In addition to the Diesel installations, there was a complete engineering school already established with facilities for extensive classroom and laboratory work, furnished with samples and working models of practically every imaginable piece of marine equipment. Cutaway working models, operated by compressed air could show students the complete operation of governors, pumps and compressors and enable them to grasp difficult operating details immediately which would otherwise take hours of valuable blackboard time.

Approximately twenty-five per cent of the course is devoted to the actual study of the powerhouse installation with its Baldwin and Nordberg units. By actually tearing down both of these engines part by part and then reassembling them, the students gain invaluable experience. The operation of the Manzel cylinder lubricators is divulged to the students by the actual dis-assembly and re-assembly of the equipment. The same is true of the Woodward governor, the American Bosch fuel pumps, and the Ingersoll-Rand compressors. What is more, the entire fuel, lubricating, and water systems are checked valve by valve and filter by filter. In this manner the Balco heat exchangers, as well as the lube oil coolers supplied by the Heat Transfer Products Corporation are presented for student scrutiny. The Quimby pumps, the Hilco lube filters, the Graham Heliflow fuel heaters, and the DeLaval Centrifuge are also torn down and rebuilt. Adequate time is allotted to the study of the electrical installation of the Baldwin Diesel.

Classroom activities comprise one-half of the course and include lectures amplified by training films, slides, and charts which give the trainees a solid background in Diesel theory.

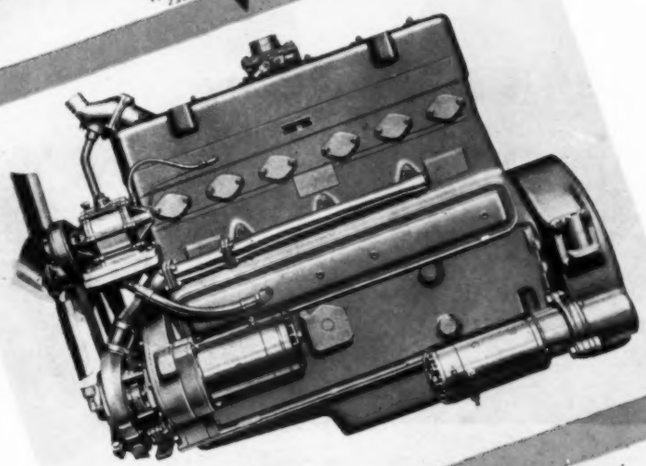
Captain G. E. Harrington, Superintendent of the Sheepshead Bay Station, has accomplished a great deal towards the training of an adequate force of Diesel engineers for the fast-growing Merchant Service. His Executive Officer, Commander J. R. Hickey has been of great assistance in this effort as have Lieutenant Commander E. Novak, the Base Engineering Officer and Lieutenant Commander A. B. Dorr, the Training Officer. It is expected that the vast facilities of the base will be utilized in the future by an evergrowing number of prospective Diesel Merchant Marine engineer officers.

BUDA "BD" SERIES COMPACT HIGH-SPEED DIESELS

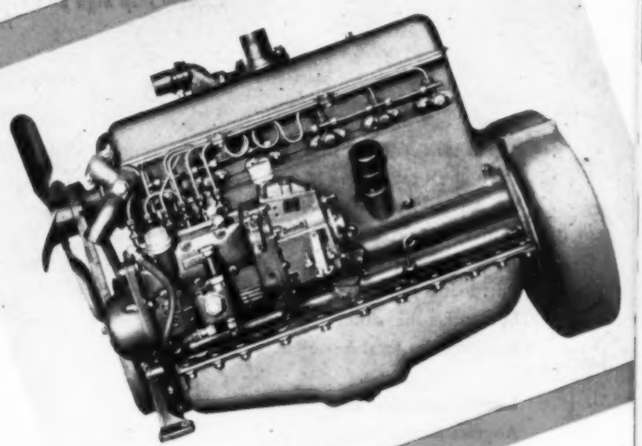


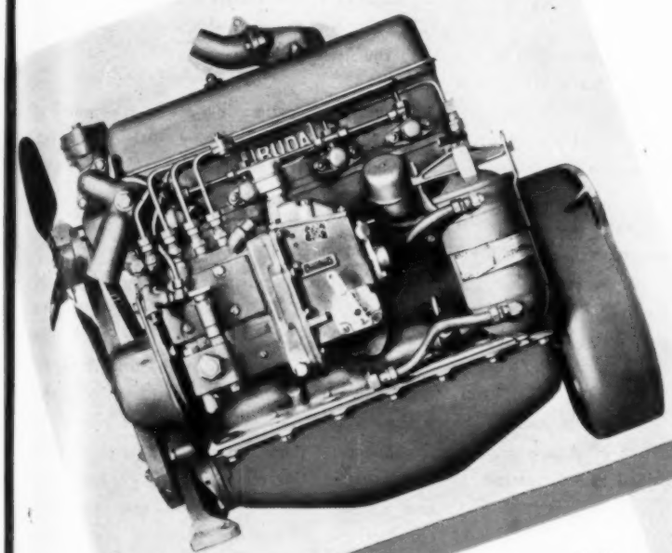
Left side of Buda Lanova automotive type Diesel which which develops 75 hp. at 1600 rpm.

Right side of same engine. It has 6 cylinders with a 4½ in. bore and a 5½ in. stroke.



New Buda-Lanova "BD" series, 6 cylinder automotive type Diesel with 230 cubic inch piston displacement.



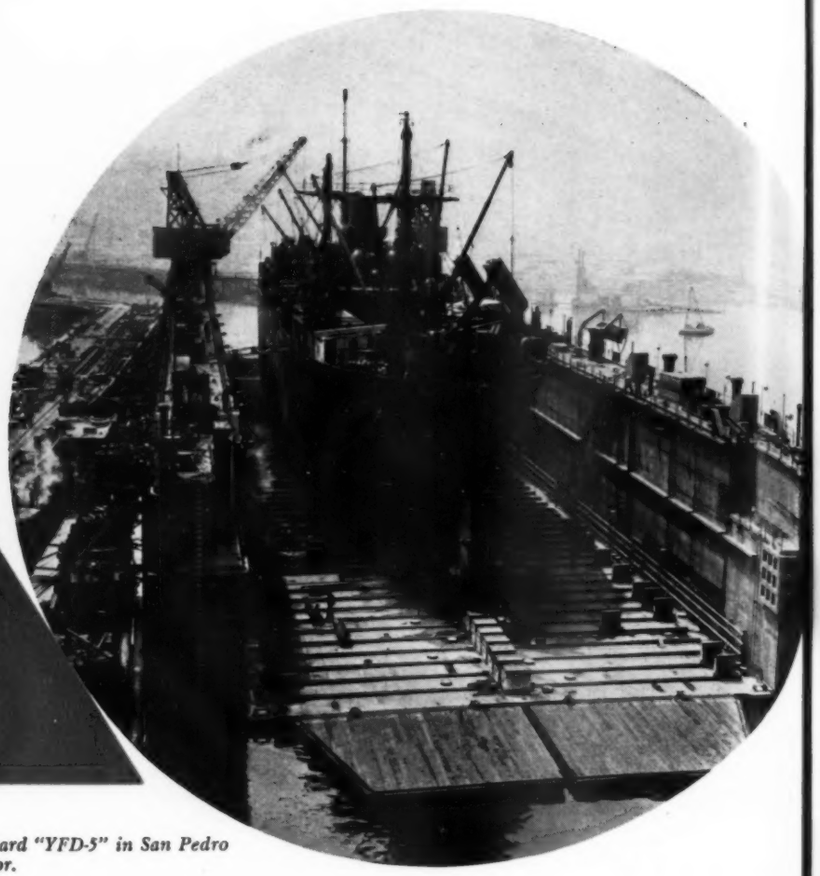


Another "BD" series Buda-Lanova 4 cylinder automotive type Diesel with 153 cubic inch piston displacement.

Standard automotive type Buda-Lanova Diesel. It has 6 cylinders and a piston displacement of 317 cubic inches.

18,000 TON FLOATING DRYDOCK

By FRED M. BURT



Liberty ship high and dry aboard "YFD-5" in San Pedro Harbor.

DIESEL engines supply power for the operation of all machinery aboard the *YFD-5*, 18,000 ton Navy floating drydock in operation at Todd Shipyards Corp., San Pedro, Calif. since April 1945. The Diesel prime movers are five Chicago Pneumatic units, four of which are rated 485 hp. each, the other being a 250 hp. unit—bringing the total horsepower to 2190.

Largest movable ship repair base in the Los Angeles harbor area, this drydock is of all-steel welded construction, and is adequate to handle almost any size ship, up to, and including cruisers.

The drydock is composed of two end sections bolted to a center section. Each section is composed of a pontoon and two fixed, rectangular side walls. The center section pontoon is 376 ft. long, each end section 87 ft. total length assembled 552 ft. with a one foot gap (molded) between sections, 96 ft. between side walls, and 31 ft. 1 in. draft over 4 ft. keel blocks.

There are 85 ft. outriggers at each end of the deck to extend working space to 622 ft. under docked ships. The outriggers can carry 250 pounds per square foot live load but have no keel blocks. There is a removable flying bridge at one end, with connections for an alternative one at the other end.

The pontoons have rounded bottoms with 6 ft. 6 in. rise and 298.94 ft. radius. Rated 18,000 tons at 7 in. freeboard, with estimated dock weight of 7860 tons, it is capable of lifting a ship of 19,000 long tons at zero freeboard.

This dock is of the Harris type, permitting the docking of the center section on the end sections, or the end sections on the center section. This feature is called "self-docking," and allows access for inspection or repair on the hulls of all sections.

With its own Diesel-electric power generating plant, self-contained suitable for off-shore operation, the large unit is classified as a "military dock."

The AC power is generated for operation of dock equipment and ship service with some conversion to DC for ship service only. The main AC plant is in two parts, and with slight variations are the same, so the detailed description following, of one of them, is duplicated by the other. The two parts are located on the "A" and "B" sides of the dock. The side having the Control House on its side wall is the "B" side. The forward end of the dock is the one with the flying bridge.

The main AC generating set is composed of two 330-kw., 480-v., 3-phase 60-cycle, direct-connected Electric Machinery generators with 0.8 power factor. The 7½ kw. exciter is installed as part of the AC set.

Power to drive each of these generators is derived from a Chicago Pneumatic Diesel Engine (with two identical engines on the other side, of course). Each engine is of 485 hp., 720-rpm., 6-cylinder, 4-cycle, 11 in. bore and 12 in. stroke. A stationary, heavy duty unit, it is designed to run on #2 Diesel fuel oil and is capable of carrying a 10% overload on the generator for two hours. The engine and generators are mounted on a common structural steel frame set on vibration isolators, supported from the safety deck structure.

Each Diesel engine is cooled with a circulating fresh water system, complete with make-up tanks, Young heat exchangers, and all neces-

sary piping, fittings, strainers, thermometers, pressure gages, relief valves, control valves.

The four Chicago Steel Tank make-up tanks are in the machinery compartments. On the "B" side a 220-gal. and a 350-gal. tank cool 2 main Diesel engines and the auxiliary Diesel engine, also a main air compressor. On the "A" side 350-gal. and 200-gal. tanks cool the other two main Diesels and the other main compressor. Each heat exchanger is a water-to-water type, supplied from a salt-water circulating pump.

The main Diesel engine fuel oil pump is supplied from a separate, 250-gal. day tank. There are four main fuel oil storage tanks of 18,000-gal. capacity, from which transfer pumps fill day tanks. These two-gpm., rotary type, direct-connected to electric motor, pumps are automatically operated from a Liquidometer float switch in the day tank.

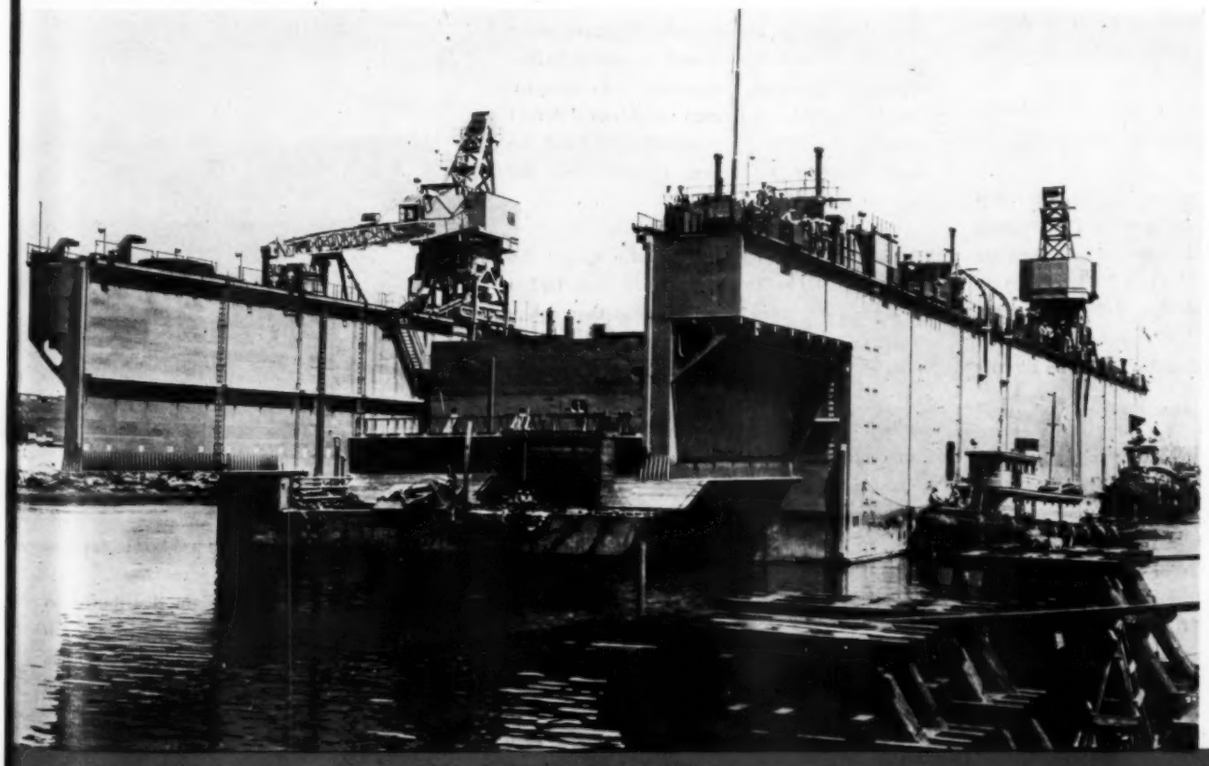
For each main Diesel, lubricating oil comes from a 120-gal. tank nearby. It is filled from a top deck filling box; it has a vent and gage glass and one-inch drain faucet, padlocked when not in use. The engine has an automatic lubricating system, operated by a high pressure pump driven from the engine crank shaft. The oil reservoir under the engine is filled by hand bucket. The pump circulates from this reservoir through a metal edge strainer and oil-cooler of shell and tube type cooled by circulating salt water, to the engine bearings and other moving parts.

Constant engine speed is maintained by a high accuracy automatic governor. It has hand adjustment, also an electric, reversible motor to permit speed adjustment through an electric control switch on the generator control panel of the main switchboard. This permits change of engine speed to adjust the power frequency.

Automatic protective and alarm devices stop the engine and sound an alarm if there is too high a temperature of cooling water or lubricating oil, or there is a failure of either supply. If the power flow reverses, the generator breaker opens automatically.

Each main switchboard is of the dead front, metal enclosed type, with separate compartments for generator controls and various air circuit breakers. Access is by hinged front panels and removable backplate. These Marquette Electric Switch Co. switchboards contain all necessary voltage regulators, voltmeters, ammeters, wattmeters, synchroscopes, generator and governor controls, current and potential transformers, relays and interlocks, circuit breakers, and all other accessories required for regulation of AC generator sets and distribution of main AC power. Manually operated alternator field and exciter field rheostats, with field discharge resistors for the alternator field are provided on the main switchboard for generator control.

Synchronizing equipment on each of the two main switchboards (on the two sides, "A" and



18,000 ton Floating Dry dock as it arrived at Todd Shipyards Corp. Note how the two end sections are docked on center section for towing.

"B") is used for synchronizing generators connected to them, and the two switchboards over the cross-tie.

Diesel air intakes are from the main machinery compartments through Burgess air filters and silencers. The exhaust piping extends through the side wall top deck, and has a vertical type Maxim silencer terminating ten feet above. All Diesel piping, fittings, United Metal Hose flexible connections, and silencers are insulated for a working temperature of 1200-degrees F.

For compressed air starting, each engine has a vertical, single-acting, 2-stage, air-cooled, 800-rpm., Quincy compressor that delivers 9-cfm. of free air at 250-psi., with air filter and muffler for entering air, automatic centrifugal unloader for starting period, and automatic controls for electric operation driven by an automatically controlled 3-hp. motor. A 4-hp. gasoline engine is available for emergency drive whenever electric power is not available.

The auxiliary Diesel engine, also a Chicago Pneumatic, is a 250-hp., 720-rpm., 4-cycle, 9 in. bore and 12½ in. stroke unit. It is direct-connected to a 150-kw. E-M generator at 0.8-pf., wound for 480-volt, 3-phase, 60-cycle. The exciter is of 5-kw. capacity. Both are of Electric Machinery Manufacturing Co. manufacture.

The AC-DC motor generating set for Ship Service on the "B" side, supplies 250/125-volt DC power, with controls mounted on a separate switchboard, generated by two 150-kw. DC generators driven by a 450-hp., 440-volt, 3-phase, 60-cycle, unity power factor, synchronous motor. This equipment supplied by Reliance Electric and Engineering Co.

The compressed air equipment is composed of two main parts on the "A" and "B" sides. Each main part is connected in two points. Each complete plant is composed of a Sullivan compressor, 6-cyl., 2-stage, fresh-water cooled, driven by a 125-hp., 440-volt induction motor. The capacity is 650-cfm. of free air at 100-psi. gauge pressure. The cooling system for jackets and inter-cooler has a fresh water circulating pump, heat exchanger, after cooler, moisture separator, air receiver, manual and automatic controls, relief valves and accessories.

Four service mains run the full length of the dock on each side, to supply various manifolds, service outlets, risers and branches, connections to pneumatic tanks, and water level and draft indicators.

There are four "unwatering" pumps on the center section, two on each side. Each is driven by a 200-hp., 400-rpm. motor, has a 30 in. dia. discharge, and can deliver 29,000-gpm. of seawater against a 14 ft. dynamic head, 21,600-gpm. against 27 ft.

On each side of each end section there is a similar pump with 20 in. discharge, 14,000 gpm. against 12 ft., 9,500 gpm. against 27 ft. Each is driven by a 100-hp., 600 rpm. motor. All of the pumps are of mixed flow type (combined radial and axial), with volute case, vertical submerged, manufactured by Morris Machine Works. All pumps are electrically controlled both from the Control House and from local stations on each pump motor starter.

The remote controls in the Control House which operate unwatering valves are accompanied by gages showing water levels in each of the ballast compartments and drafts at certain locations on the hull. To unwater the dock, all suction valves (in the ballast tanks) are opened (except crossover, connecting valves used to pump water from one compartment to another). Then all discharge valves are opened and the pumps are started. Different sized openings control the rate and amount of ballast removed from each compartment, to compensate for variables in uneven weights of different parts of the ship being docked. To flood the dock, flooding valves are opened with the suction valves left closed.

In docking a ship of non-uniform weight distribution, the contained water in each ballast compartment must be adjusted so that downward weight of the ship carried by the blocks over the ballast compartment, plus the weight of structure of that part of the dock, plus the weight of contained water, is equal to buoyancy forces acting upwards.

The main water supply system is in "A" and "B" parts, with a Chicago Pump Co. 500 gpm. pump direct-connected to a 20-hp. motor, supplying a 6,000-gal. main suction tank, on each side. On each side there are also three circulating pumps of 220 gpm. capacity hooked to 5-hp. motors.

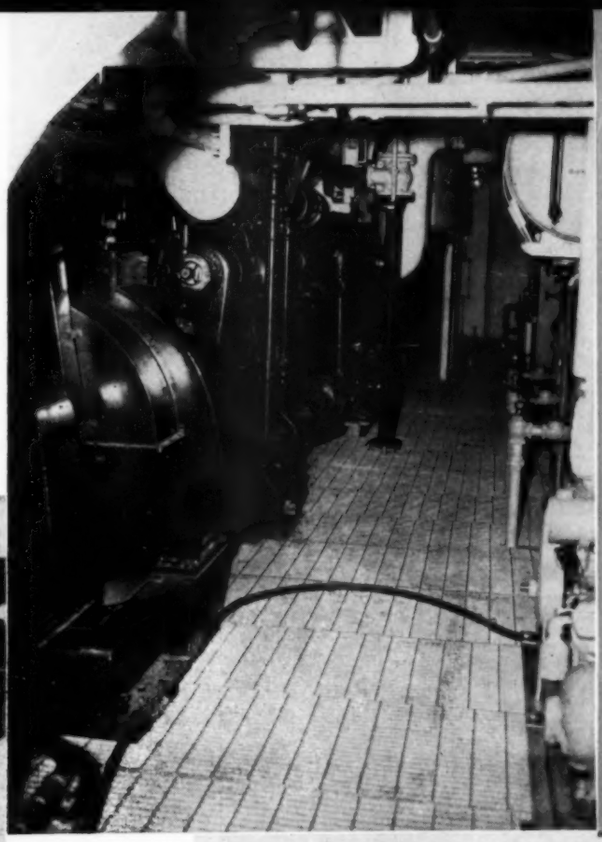
There are four Fire and Service pumps, each with a 500-gpm. against 100-psi. dynamic head, direct-connected to a 75-hp. motor.

Fresh water supply is carried in three tanks on each side, each three totaling 4800 gallons capacity. The fresh water pneumatic system has a pneumatic supply pump with a 90-gpm. capacity direct-connected to a 5-hp. motor.

Control board for unwatering pumps. Chicag Pneumatic Diesel generating unit is seen in bac ground.

There are four power capstans distributed on the side wall top decks. They are of Link Belt make with 30 hp. motors providing 15,000 lbs. line pull at rope speed of 40 ft. per min. and are fitted with magnetic brakes.

The gantry crane on each side has a 75 hp. DC main hoist drum, 45 hp. boom hoist drum, with AC-DC motor generator situated in the cab. The rotating (slewing) mechanism has a 15-hp. AC motor. A ship is hauled into the dock by using the capstans (preferably) or the ship's winches.



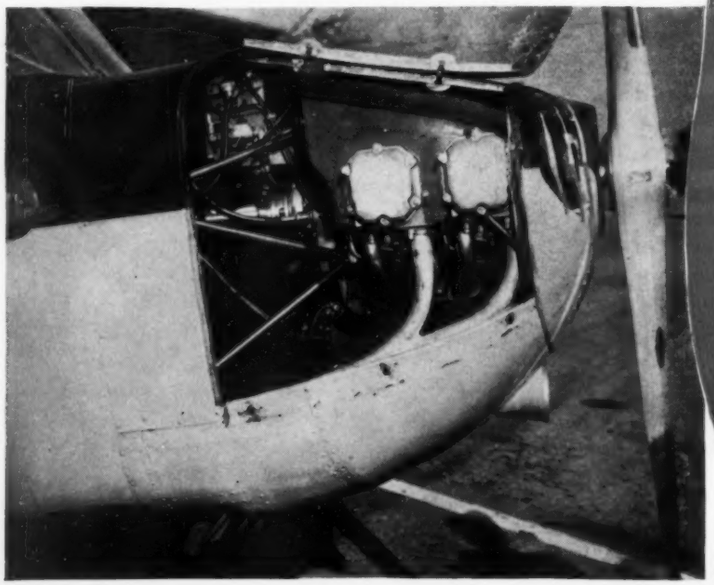
One of four main Diesel engines, supplied by Chicago Pneumatic. They develop 485 hp. at 720 rpm.

250 hp. auxiliary Diesel engine which drives an Electric Machinery Co. 150 kw., 480 volt generator.

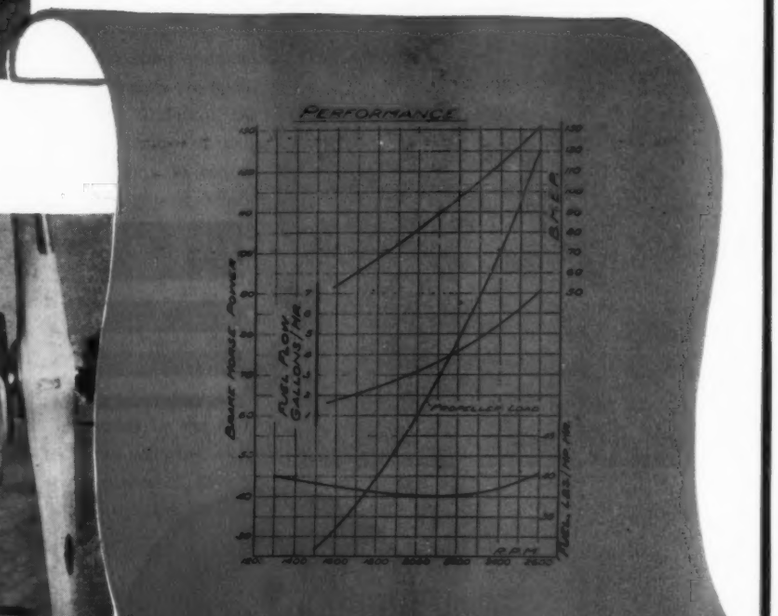
With sea valves open, dock settles to proper depth to receive ship. Note large gantry cranes on each side.

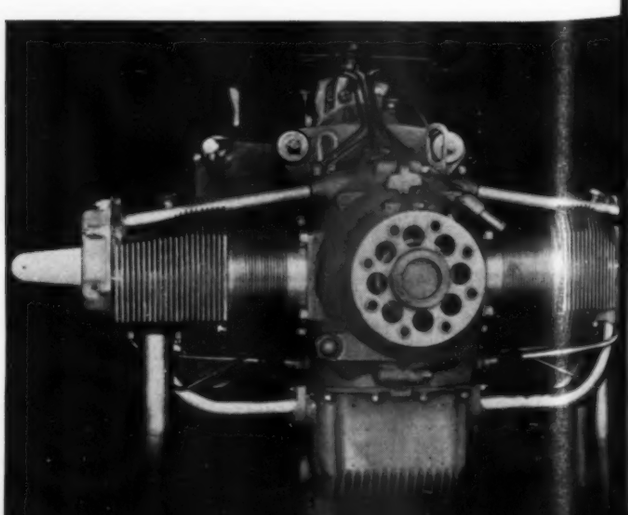
Fred A. Thaheld, designer of the engine, standing in front of his Diesel Stinson.

Thaheld poses with his sponsors W. D. Shaffer (right) and Donald U. Shaffer (left).



The compact Thaheld-Shaffer 235 lb., 125 hp., 2600 rpm., aircraft-Diesel, installed in 3-place Stinson.





Bench view of Thaheld designed, 4 cylinder opposed, air-cooled Diesel. It has a 4⅞ in. bore and a 3⅞ in. stroke.

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THE FLYING DIESEL MAKES ITS BOW TO AVIATION

By L. M. BARTON

THE world's flying dollar reached its highest known buying power at Long Beach, California, recently when Fred A. Thaheld flew his 10-A, three-place Stinson monoplane, powered with his new 235 pound, 100 horsepower, four cylinder, air-cooled Diesel engine from San Diego to the Long Beach airport, a distance of 105 air miles in 55 minutes, with a fuel consumption of approximately 2½ gallons per hour. This means that the light plane flyer may soon be able to go places at a fuel cost as low as one-fifth of a cent per mile, with fuel costing as high as 10c per gallon.

No one would have suspected that the yellow and black monoplane, as it glided from 4,500 feet altitude to the runways of the Long Beach airport with Thaheld at the controls, had a Diesel engine in its nose. The engine's exhaust was as clean and free from smoke as any gasoline engine ever was. There was no more exhaust noise, if as much—and certainly no more vibration than the former gasoline power plant had ever produced in this same agile ship.

When Thaheld set his brakes, closed the throttle and climbed out of the cabin he was prepared to further astound the keen aircraft experts who closed in around him. When the thin edge of a dime turned the cowling screws and the hood was raised, they saw what was to all outward appearances a conventional four cylinder, opposed, air-cooled engine. But there were no fuel intake manifolds. There was no carburetor with its heating gadgets. There was no magneto, no complicated distributor and ignition wiring system or coils—and no spark plugs. In fact, there was enough vacant room under the cowling to make it resemble a liberal sized baggage compartment.

Actually, the only two things that make this little Diesel engine run with such efficiency is the tiny fuel injection pump that measures every charge of fuel and injects it into the combustion chambers at 1,500 pounds pressure per square inch and the Breeze combustion startet which merely resembles the conventional electric generator so common with every type of self starting engines. There is no grunting or groaning of the starter. The engine starts immediately and easily.

Thaheld explains that there are far more advantages in his Diesel engine for aircraft than the low cost of Diesel fuel. Any flier who has progressed as far as his first solo flight has already been taught the hazards of icing carburetors. The Diesel engine has no carburetor so there is nothing to ice or freeze. Diesel fuel is never mixed with air until both are safely within the confines of the cylinder combustion chamber.

Instead of waiting as you do before taking off with a gasoline power plant, for the cylinder head temperatures to rise as high as 425 degrees to insure a safe take-off, the Diesel engine is ready for the take-off immediately. With its efficient air cooling, the head temperature of Thaheld's Diesel engine increases slowly to 350 degrees at the take off, and as the engine climbs and settles down to its plane's cruising speed this temperature will drop to approximately 300 degrees. This solves the problem of making the short, fast take-off possible.

The new Diesel engine has a compression ratio of 16 to 1. As it begins to climb its rpms. increase and there is the natural increase of propeller rpms. This does not continue indefinitely, for ultimately the Diesel reaches its ceiling, but Thaheld has already proven that his Diesel engine should add approximately 40% to the ceiling of the gasoline power equivalent. As a matter of fact Thaheld knows that his engine will climb the plane to the altitude where its compression ratio will drop to approximately 11 to 1. This, incidentally, is the compression ratio at which this Diesel engine develops its best power cruising efficiency and the greatest operating economy.

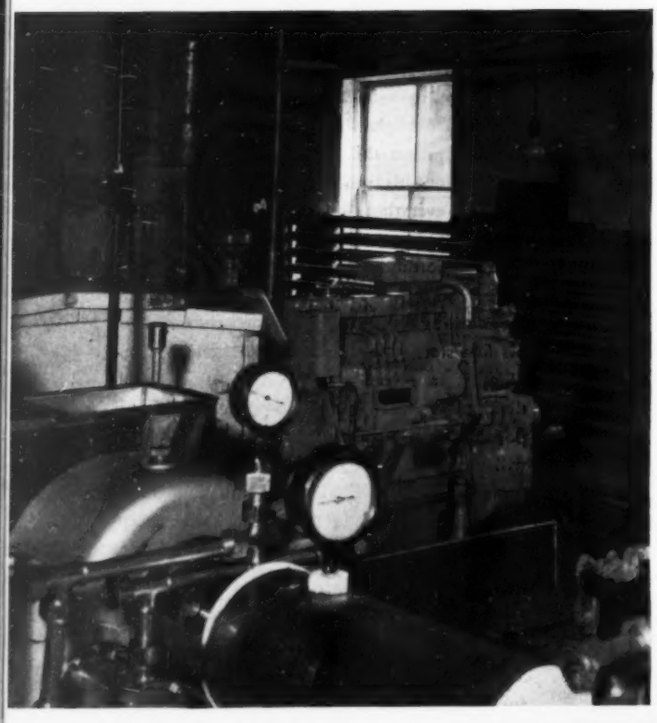
Aircraft engineers have had little opportunity to study the practicability of the Diesel engine for flying, for the large producers of aircraft power plants, as well as the smaller ones, have limited their development to gasoline power. It costs money to design, experiment and test—a great deal of money—and evidently no one has been willing to risk costly experimental investments until Thaheld's financial supporters, the Shaffer Tool Works at Brea, California, were convinced that Thaheld could produce what he promised. From that point on, until the finished engines proved themselves both in the air and on the ground test stand, W. D. Shaffer and his son Donald U. Shaffer gave Thaheld everything he needed.

The aviation industry is interested in Thaheld's engine and the Messrs. Shaffer and Thaheld are working out their plans for production of his first stock model and scheduling the design of other models. Based upon plans which individual aircraft builders have advanced, it is possible that the next aircraft engine Thaheld will build will be a six cylinder, 175-200 horsepower engine, with all parts interchangeable with the four cylinder engine with the exception of the crank case, crank shaft and cam shaft.

It is a well known fact that the fire hazards of gasoline tend to disappear where Diesel is used and this is borne out by the fact that Diesel fuel will not even flash when poured over a hot engine. Diesel fuel also eliminates the often occurring fires and explosions on aircraft in flight where leaks in fuel lines or fuel tanks permit the highly explosive, high octane gasoline fumes or vapors to fill wing sections unnoticed and subject them to ignition by static electricity. This safety factor in favor of Diesel will surely lower insurance costs appreciably.

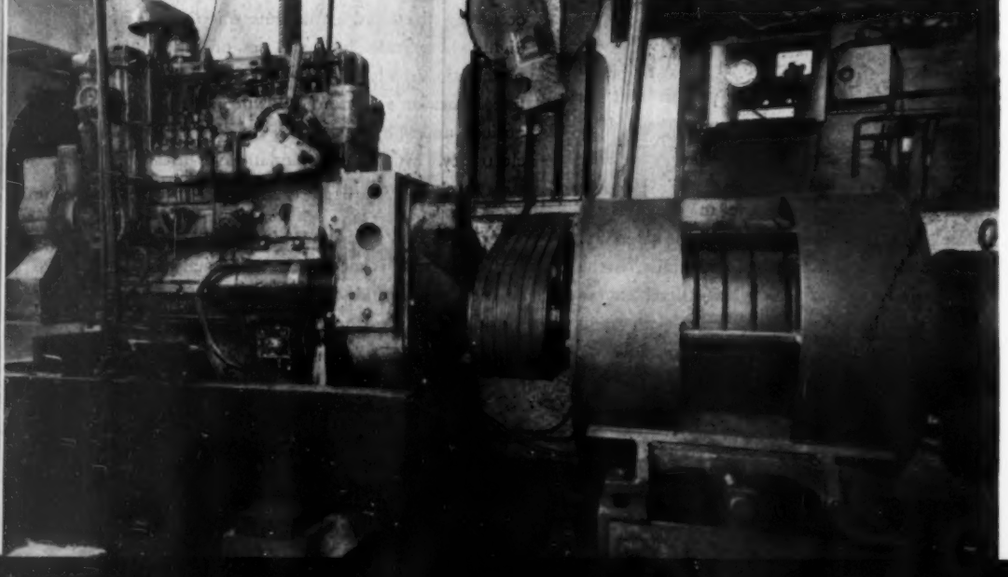
Diesel fuel used in all of Thaheld's ground and flying tests is merely the re-refined gas oil, Diesel fuel, produced by any oil refiner, and the lubricating oil, used throughout all of the tests is a standard 100% pure mineral oil.

This modern 480-acre dairy farm receives its light and power from a Diesel.



A 55 hp. Caterpillar Diesel saves this creamery and ice cream plant $150 a month compared to utility power cost.

Caterpillar Diesel generating unit installed on the farm shown above. Operating 24 hours a day, the engine consumes 6½c worth of fuel per hour.



DIESELS IN DAIRY AND ICE CREAM PLANT

By FRED M. BURT

THEY'RE making ice cream again and in this case it begins with Diesels on the dairy farm. Milk production on United States farms in recent years topped 120 billion pounds from some 27,000,000 cows. Fluid milk production ranks high in the industrial index, with the present production pretty well meeting the steadily growing demand, though with oft recurring shortages in different areas. Though the production of ice cream has been down from its peak, due to cream and sugar shortages, it promises to again become much more than a token part of the vast dairy business. Even if it sometimes takes two or three attempts to corral a quart, huge quantities are manufactured for use at home and abroad. During one of the delicacy's best years, 1939, there were 2,734 ice cream plants in operation, employing 16,000 persons and using $146,000,000 worth of raw materials to manufacture $286,000,000 worth of ice cream and ices, placing it 41st in the industrial index. Here is another industry in which the modern Diesel engine makes possible the necessary margin of profit for the isolated dairy farm or the city located factory.

All purpose 1,500 hp. Diesel-Electric Locomotive built by the Ingalls Shipbuilding Corporation.

THE INGALLS 1500 H. P. ELECTRIC LOCOMOTIVE

By ROBERT H. MACY*

THE Ingalls Shipbuilding Corporation, Locomotive Division has just completed at its Pascagoula, Mississippi plant, its first 1500 hp. Diesel-electric locomotive for demonstration on various railroads. This locomotive is an "all purpose" type suitable for heavy switching or transfer service, or for feight and passenger road service, either singly or in multiples of two, three or four units. This adaptability is made possible by the turret type of cab construction which makes possible 360° vision. The locomotive is equipped with a pilot at either end, making it suitable for switching or for certain types of road service and suburban service where it is not always feasible to turn a locomotive around. The locomotive is equipped with the necessary jumper and air connections for multiple operation.

The underframe and body are of all welded steel construction. The underframe is of particularly rugged design with 14 in. H-beams for center sills with a heavy plate across the top and bottom of the sills, making in effect, a box girder. There is a portable hatch in the roof for access to the engine, and in the event of removal of a complete engine, the entire roof over the engine may be taken off. The trucks are of swing bolster type, each having 8 triple coil springs and 2 quadruple full elliptic springs, and 42 in. diameter wheels with clasp brakes. Trucks have two axles each, with traction motors geared to each axle. Journals are 7 in. by 14 in. with Timken roller bearings.

The locomotive is equipped with a 1650 hp. Superior Diesel engine made by the National Supply Company, Superior Engine Division of Springfield, Ohio. This is a four cycle turbo-charged type operating at 660 rpm. The engine delivers 1650 hp., and after the auxiliary load for driving of fans and other equipment is deducted 1500 net horsepower is available at the generator for traction purposes.

The Diesel engine is of the 8 cylinder in-line type having a bore of 12½ in. and a stroke of 15 in. The engine bed, block and cylinder heads are steel castings. The engine bed is extended to provide a rigid support for the generator. The engine uses a dry cylinder block with individually cooled cast iron liners. The dual intake and exhaust valves are of heat resisting steel with seat inserts and are interchangeable. The engine uses cast iron oil cooled pistons and a forged one piece crankshaft. A water cooled manifold of the Helixhaust type is used.

Individual fuel injection pumps actuated by a chain driven engine crank shaft are installed while the fuel supply pump is driven by an electric motor. Circulating water and lubricating oil pumps are built in the engine. A Woodward hydraulic variable speed governor is used in association with Westinghouse auto-load control. The usual alarms are provided for the lubricating oil and water cooling systems, and in addition the bearing watchdog system, manufactured by the Paxton Diesel Engineering Company, is installed which will shut off the engine in the event of excess wear or failure of bearings. An Elliott turbo-charger is attached to the engine, taking its air through a filter attached to the turbo-charger.

Straight fin tube type radiators are used in each side of the locomotive. Each radiator is built in two entirely separate sections so that in the event of the failure of one section of the radiator, the locomotive will still have three-quarters of its cooling capacity left, and the radiators are generously proportioned so that the locomotive could continue to operate at full power in the event of such difficulty. The cooling air passes through the radiators into an air duct and through two electric motor driven cooling fans located in the roof. The cooling fans are driven by variable speed motors

* *Chief, Locomotive Division, The Ingalls Shipbuilding Corporation, Pascagoula, Miss.*

associated with Minneapolis-Honeywell automatic shutter control, making it possible to obtain very close regulation of water temperatures. After the water is cooled in the radiator system, it passes through an oil cooler of the shell and tube type, and after thus cooling the lubricating oil the water returns to the engine.

Space is provided adjacent to the radiators for the installation of a steam generator and a portable hatch is arranged for easy removal. A water tank is built into the locomotive.

All electrical equipment was manufactured by the Westinghouse Electric Corporation. There are actually four generators, the main generator, the fan generator, exciter, and auxiliary generator. The main generator is attached directly to the engine crank shaft, and is mounted on an extension of the engine bed plate. The main generator is rated 750 volts maximum with a continuous rating of 1760 amperes at 660 rpm. The fan generator is attached to an extension of the main generator shaft, and the exciter and auxiliary generators are driven by vee-belts from a sheave on the end of the fan generator.

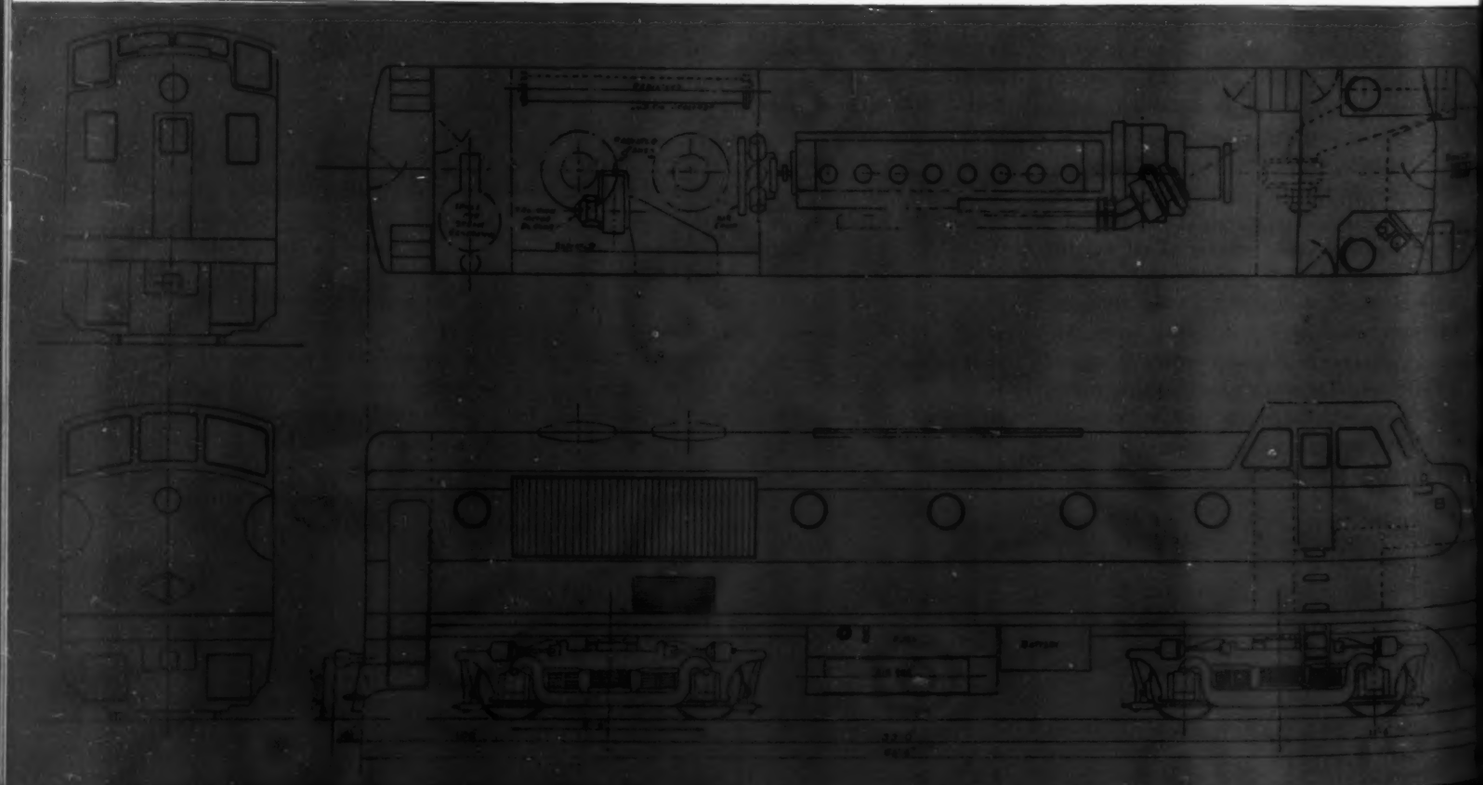
The traction motors are Westinghouse Type 370-F with a gear ratio of 15:63. These motors are cooled by electric motor-driven traction motor blowers, discharging air through flexible connections to the top of the traction motors. The use of the electric driven traction motor blowers makes it possible to maintain motor cooling at an efficient level even when the Diesel engine is idling. Blowers take cool air from outside, which passes through a screen and baffle type filter, assuring clean, cool, dry air for the traction motors. This has a marked effect on the capacity of the locomotive.

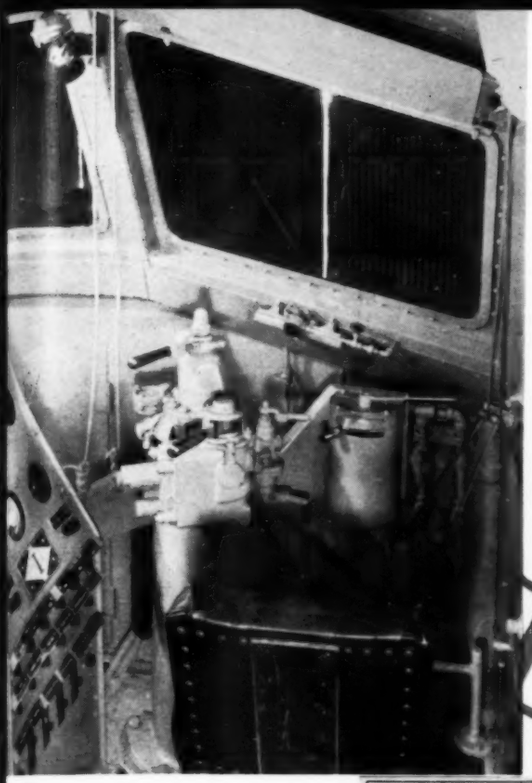
The exciter is of the differential series field type, and is both separately and self excited to provide the desired engine loading characteristics. It is supplemented by the Westinghouse auto-load system of load control which reduces the generator power demand on the engine if the engine is unable to develop its normal output for any reason. This prevents overloading and results in better performance and reduced engine maintenance.

The traction motors are connected in series-parallel only, thus eliminating the apparatus required for transition from series-parallel. In addition to the saving in switches and relays the operation is improved by the steady application of power during the acceleration of the train. At higher speeds there are two stages of field shunting.

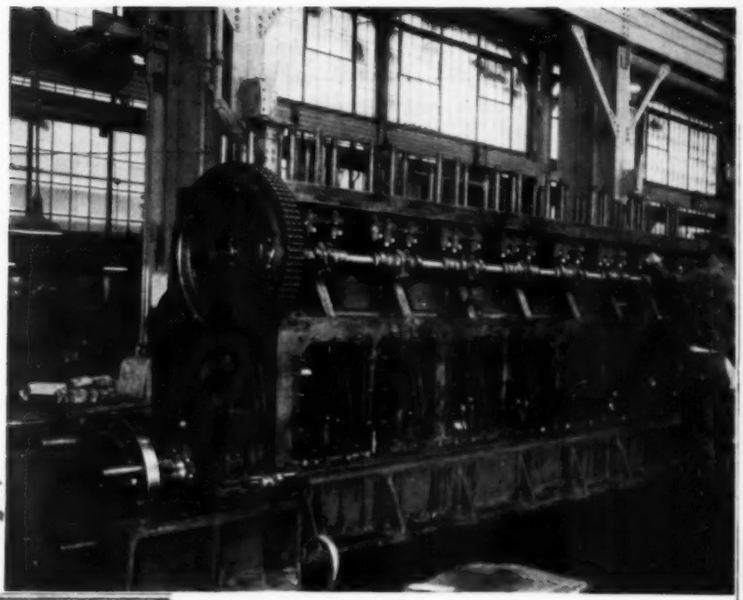
The use of conduit with customary difficulties due to condensation and grounding has been completely eliminated on this locomotive. All cable used is of the lead and bronze armored type with varnished cambric insulation. This type of cable has been extremely successful in marine installations for many years and resisting heat, cold, moisture, oil and mechanical injury, and it is expected that it will result in longer life, and less maintenance expense in Railway service, than the conventional conduit system of wiring. Connections to traction motor leads are made in watertight junction boxes instead of the usual connectors and tubes.

List of Equipment	Manufacturers:
Diesel Engine	National Supply Co. Superior Engine
Electircal Apparatus	Westinghouse Electric Corp.
Radiators and Fans	American Blower Corp.
Traction Motor Blowers	Westinghouse Electric Corp. and Buffalo Forge Co.
Valve Gear, Fuel Pump and Water Pump Drives	Diamond Chain Co.
Oil Cooler	Ross Heater Co.
Duplex Oil Strainer	Purolator Co.
Oil Filter	Nugent Co.
Flexible Coupling	Falk Corp.
Roller Bearings	Timken Roller Bearing Co.
Air Compressor	Westinghouse Air Brake Co.
Air Brakes	New York Air Brake Co.
Head Light and Electrical Appliances	Pyle National Co.
Shutters & Shutter Control	Minneapolis-Honeywell Regulator Co.
Bearing Watchdog	Paxton Diesel Engineering Co.
Hand Brake	Ajax-Consolidated
Fire Extinguishers	CO-Two Equipment Co.
Storage Batteries (Exide)	Electric Storage Battery Co.
Windshield Wipers	C. A. Sprague Devices
Speedometer	Westinghouse
Emergency Fuel Cutoff Valve	Manning Maxwell & Moore
Gauges & Thermometers	J. P. Marsh

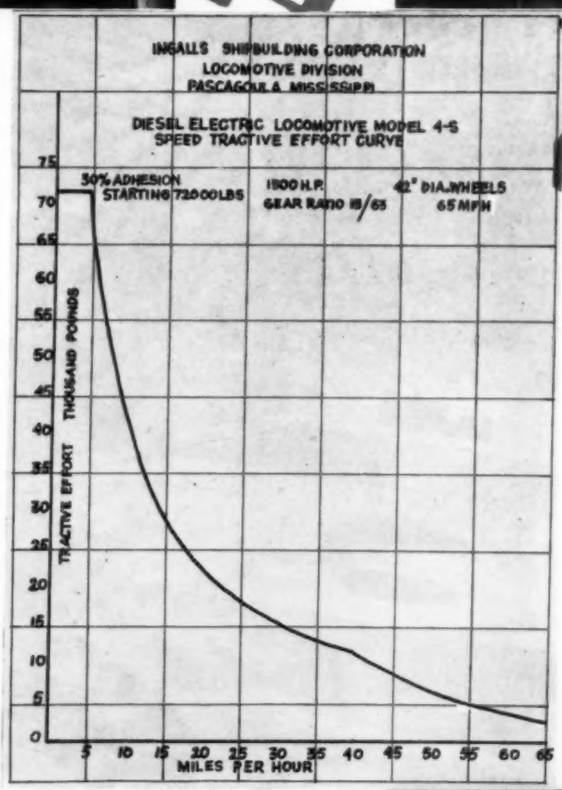




terior view of locomotive cab showing ntrols and instrument panel. The con- ruction of cab affords 360 degrees vision r engineer.

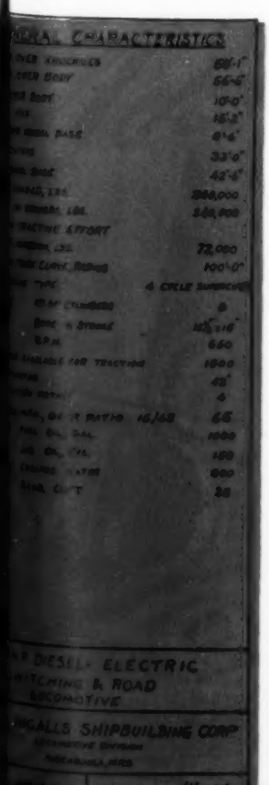


Shop view of 1650 hp. Superior Diesel being assembled showing Diamond Chain drive for camshaft assembly.

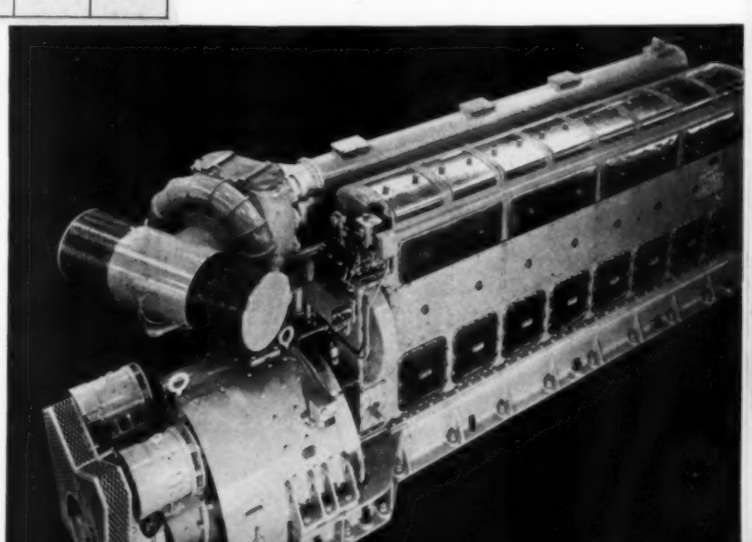


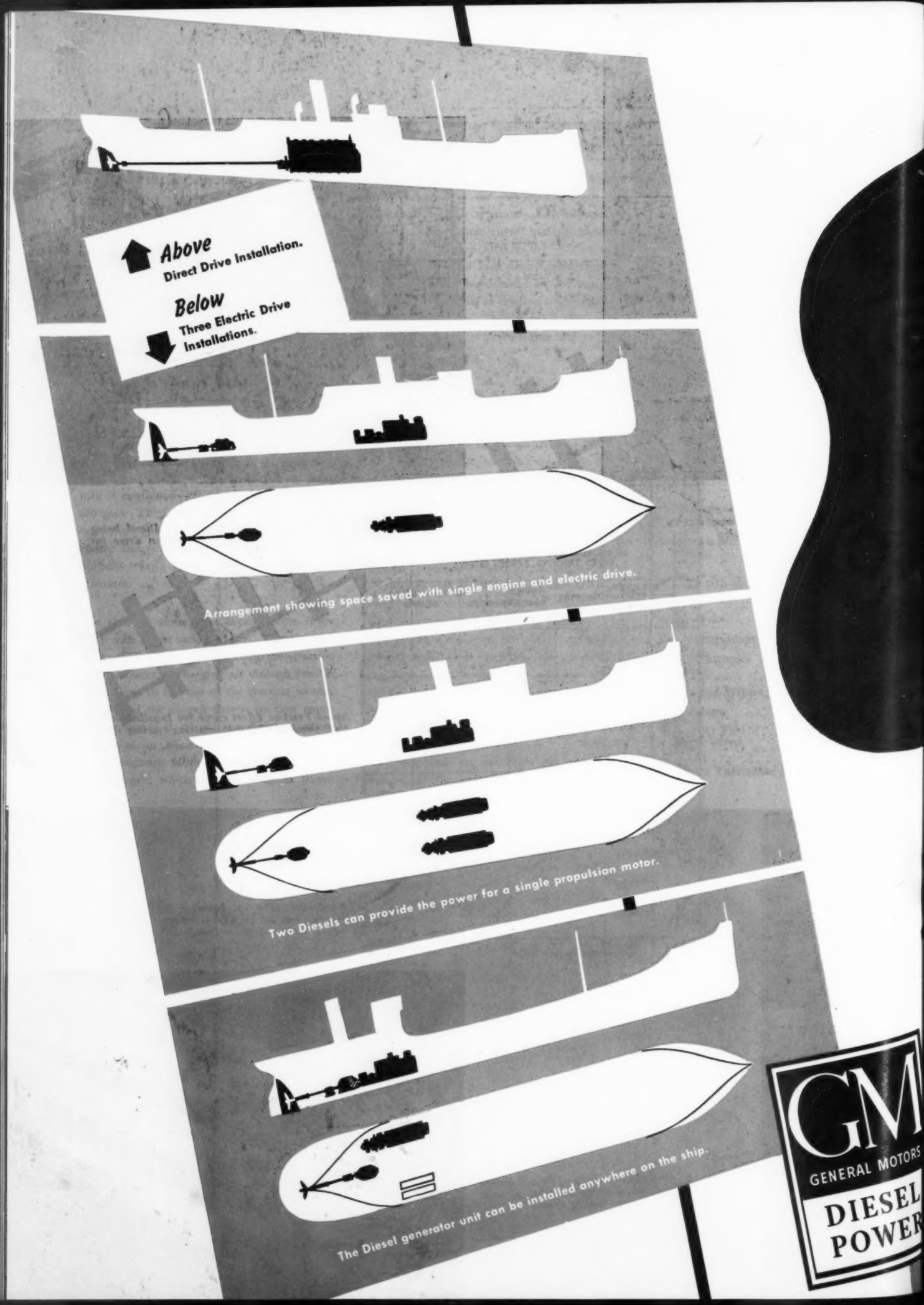
Speed-Tractive Effort curve for Ingalls locomotive, showing 72,000 lb. starting tractive effort.

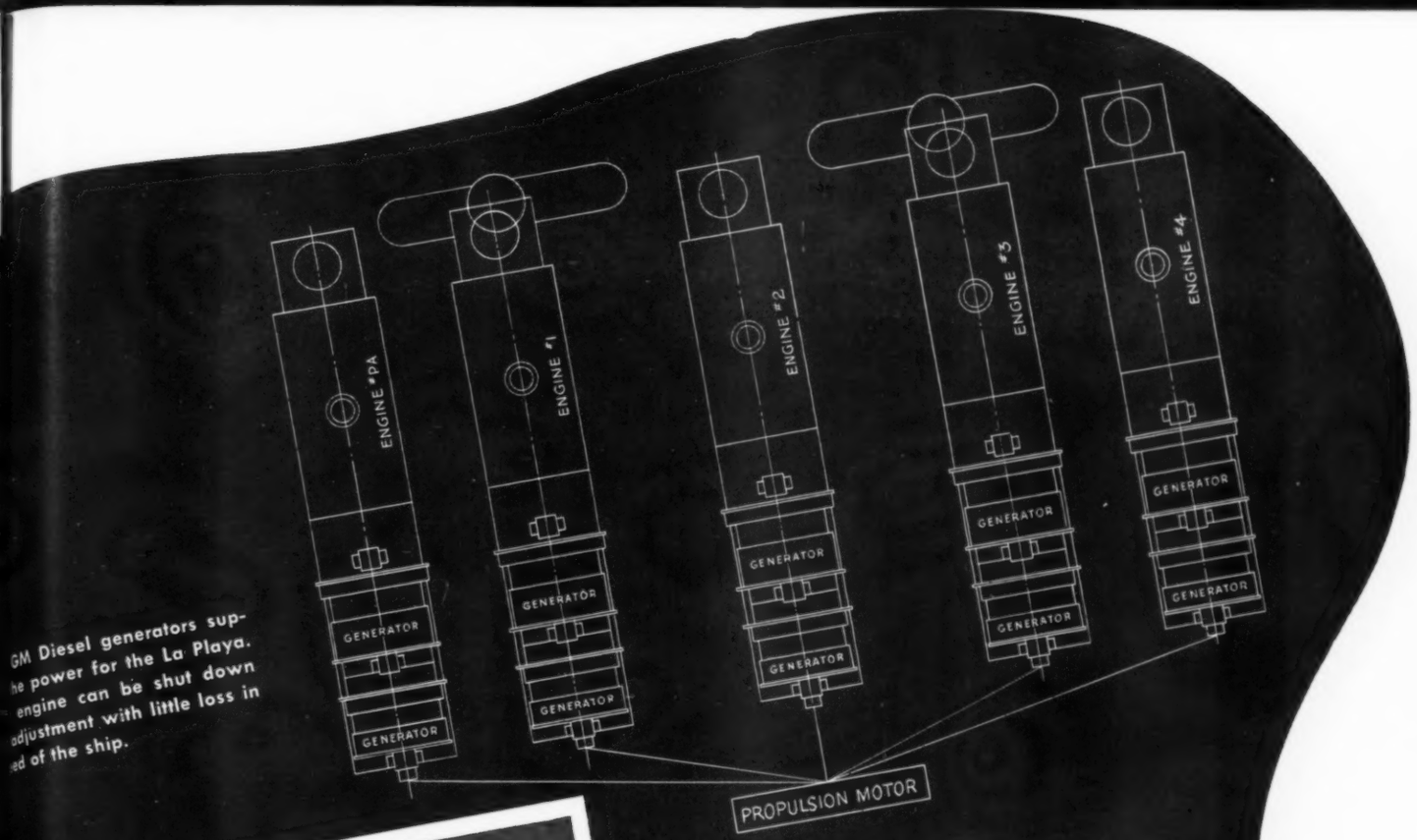
8 cylinder, 1650 hp. Superior Diesel which is installed in Ingalls locomotive. Elliot-Buchi turbo-charger is installed.



General characteristics of Ingalls Diesel locomotive showing location of machinery and operating space.




Above
Direct Drive Installation.
Below
Three Electric Drive Installations.
Arrangement showing space saved with single engine and electric drive.
Two Diesels can provide the power for a single propulsion motor.
The Diesel generator unit can be installed anywhere on the ship.
GM
GENERAL MOTORS
DIESEL
POWER



GM Diesel generators sup-
he power for the La Playa.
engine can be shut down
adjustment with little loss in
ed of the ship.

The M. S. La Playa gained 270 gross tons and increased her speed 1½ knots when GM Diesel-Electric Drive was installed.

More net... same gross

Cast a measuring eye at these diagrams, and you'll see how General Motors Diesel-Electric Drive turns lost space into profitable net tonnage.

Engines can be small, conveniently placed and mounted in their natural level position. Shafts are short.

Add all this to the instant response of GM Diesel-Electric Drive, and you'll know why it is going into all kinds of yachts, government and commercial craft from tugs to liners.

CLEVELAND DIESEL ENGINE DIVISION,
GENERAL MOTORS CORPORATION

... II, Ohio ... ENGINES ... 150 to 2000 H.P.

NEW-TYPE DIESEL GULF SHRIMPER

By CHARLES F. A. MANN

NOWHERE do the succulent Shrimp thrive so well nor yield such a large, continuous harvest from the sea, as do the large, juicy Gulf Shrimp from the limpid Gulf of Mexico. Shrimp are to Louisiana what salmon is to Alaska or pineapple to Hawaii or lobster to Maine!

But, like all very old, prosperous fisheries, the industry is wedded to tradition . . . time honored methods; time honored boats and time-tested thinking. The industry is based on shrimp boats about 60 feet long, using ice for cooling the catch and good for 3-5 days away from port.

Last fall, under the leadership of J. A. Pullen, a brand new departure in shrimp boats was conceived, built and delivered at the end of a 6,000 mile voyage from Puget Sound, and now is at work in a series of experiments to completely change Gulf shrimp fisheries.

His boat is named *Sovereign* . . . a royal crest is painted on the front of the pilot house. If it is a success, there is a huge new market for fishing vessels of this type, Diesel driven, and with auxiliary Diesels driving A.C. generators.

The vessel was adapted from the Pacific Northwest dragger and seiner types—modified to fit the peculiar requirements of shrimp fishing, but containing practically a small-size replica of the refrigerated holds and refrigeration system of the California tuna clipper.

Sovereign is 82 x 22 x 10.6 (depth), and is solidly built of sawed oak framing and huge oak engine foundation, with Douglas fir planking.

The vessel is designed to carry a full low temperature refrigeration system, including facilities for quick freezing fresh caught shrimp, along with shrimp fishing equipment, to sea, to remain for days or weeks, till the full cargo of 80 tons of fresh, quick-frozen shrimp is stowed aboard. Then run to home port, shut off the Diesels and hook on to a 220 volt A.C. electric cable line from shore, and the crew go home to their families, while the frozen cargo is kept in condition until unloaded. Gone are the short trips into the Gulf—to stay there till ice is melted and the cargo has to be dumped ashore to prevent spoilage.

The *Sovereign* has a net tonnage of 51 tons and, because shrimp is a light species, 80 tons is considered a big load for her 8 frozen wells below the main deck. The wells are lined with Super Harboard waterproof plywood, which does not need caulking. It is the first postwar refrigerated fishing vessel with a full Freon system, having two 15 hp. York compressors, feeding the compressed Freon through 6,000 feet of welded, galvanized 1 inch cooling coil draped around the permieter of each of the 8 fish tanks.

Four 2 hp. Pacific brine pumps and one 3 inch 5 hp. Fairbanks, Morse fire and bilge pump; and all piping, are fitted into the shaft alley between two rows of four tanks.

A Northern dragger and two 5 reel Gurdies are fitted, and she carries 500 special welded wire baskets to hold the shrimp. Normal procedure will be to catch, head and pack the shrimp in these steel baskets, immerse in cold brine, kept down to 24-28 degrees F. for about 12 hours, to freeze solid. After that they are dry stored in the other 7 wells and kept at 30-32 degrees F. until unloaded. Brine is ordinary seawater charged with rock salt to give a 15% solution. Thus the shrimp are cleaned, salted and quick frozen in fast succession, to give a product wonderfully fresh and unlike the partially-warmed shrimp caught and handled with old-fashioned ice pack methods. Main propulsion is a 6 cylinder Enterprise Diesel, rated at 400 hp., driving a Coolidge 3 bladed propeller. Full pilot house control system is fitted for the main engine.

Auxiliary power is supplied by two 3 cylinder General Motors 2-cycle Diesel auxiliaries, delivering 45-60 hp., and turning 35 kw. Columbia generators, at 220 volts A.C. Thus all clumsy D.C. motors and heavy storage batteries are eliminated, and one or both of the alternating current sets will provide continuous power for the entire ship. Normally, after loading, one set will provide sufficient power, except in very hot weather.

Tank space is provided for 5500 gallons of fuel, 1200 gallons of water and 300 gallons of lube oil. At full power, with both auxiliaries wide open, consumption is 20 gallons per hour. A Union gasoline engine auxiliary compressor set is fitted. The entire deckhouse is of Super Harboard plywood construction, and roomy quarters for a crew of 12—10 below and 2 in the pilot house are provided. A roomy galley with oil range, electric ice box and stainless steel working surfaces is provided.

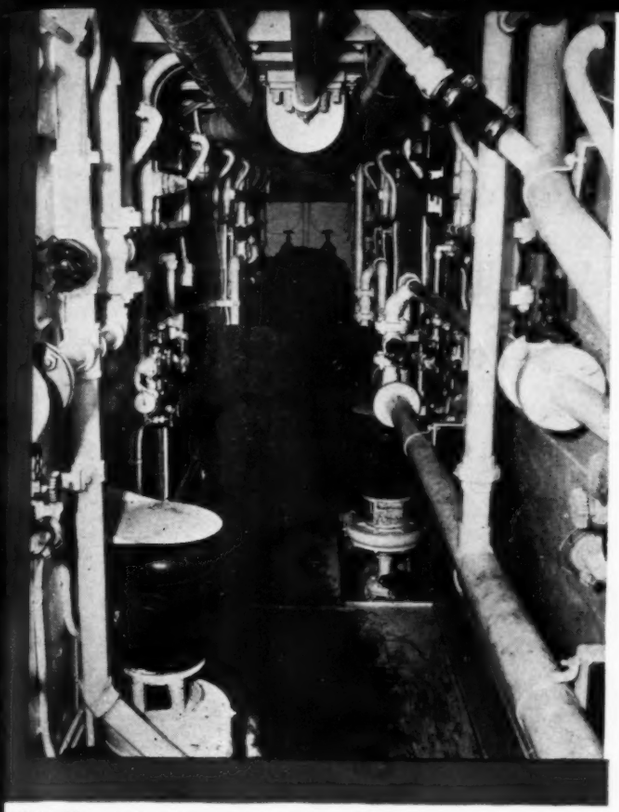
The *Sovereign* was built by the J. M. Martinac Shipbuilding Co., at Tacoma, Wash., headed by J. M. Martinac. Fred Borovich is Supt. of Yards and vice president; Ted Ultsch, machinery Supt. in charge of machinery installation, and Fred Hansen, Business Manager.

Accompanying Mr. Pullen on the long voyage from Puget Sound to New Orleans was Mr. Borovich and Mr. Ultsch, who reported a marvelous trip and 100% performance.

If the *Sovereign* is a success, more will be built like it.

Shaft alley tanks on ei in left fore

W. H. Po (left) on per, J. A.



Shaft alley of the "Sovereign" showing shrimp tanks on either side. Brine pump can be seen in left foreground.

Captain J. A. Pullen explains the pilot house arrangement. The radio equipment can be seen mounted over chart table.

W. H. Porter, Enterprise Diesel representative (left) on board the "Sovereign" with the skipper, J. A. Pullen.

View of the 6 cylinder, 400 hp. Enterprise Diesel installed on board "Sovereign."

Facts and Figures on

21-YEAR-OLD MUNICIPAL DIESEL PLANT

ORANGE CITY, IOWA

By T. J. MALONE

WHEN the municipal Diesel electric plant in Orange City, Iowa, came of age last year—its first rate schedule was dated February 8, 1924—the community looked back with pride and satisfaction on a notable record of achievement.

The investment in the plant, covering land, building, generating and other equipment, and distribution system, stood at $176,137. All had been paid for, and all out of plant earnings except an initial $7,500 cared for by tax. The plant was debt free. The bond debt on the oriiganl plant, $40,500, had been retired ten years before due. The plant had paid from earnings for all added equipment and extensions. It had helped finance from earnings various other town services and improvements.

Besides furnishing electricity to consumers at reasonable rates, the plant had given free service for street lighting, Christmas lights, water pumping, and town hall and light plant —service that in the fiscal year, ending March 31, 1945, totaled nearly 22 per cent of the entire output. The plant fund on that date had cash on hand of $14,666.95 and $12,502 in war bonds. The generating equipment in the plant consisted of three Diesel engines of a combined 1,080 horsepower and a rated alternator capacity of 560 kilowatts, all supplied by Fairbanks, Morse & Co.

Orange City, laid out in 1870, was settled by Hollanders and named for Prince William of Orange. A beautiful little town of about 2,000 people today, it reflects the Dutch traits and qualities of its founders. Its block after block of uniformly groomed lawns are matched by the neatly kept backyards that go with them.

The Municipal Power Plant in the Holland Dutch town of Orange City, Iowa.

It is a tulip town. On many of the streets, business as well as residential, boulevards between curbs and sidewalks are lined at the curbs with tulip plantings. When they are in bloom, the town is a flower garden, attracting visitors from a wide area. Orange City every year declares a Tulip Day, about the middle of May, when every one takes a holiday, old-country costumes flourish and a parade features floats reminiscent of the Dutch origins of its people.

After the battle with the private utility serving Orange City by transmission line, which tried to block construction, the town built a generating plant of its own in 1923. It installed two 100 hp., two-cylinder, Fairbanks-Morse Diesel engines, as a starter. In the next full fiscal year, April 1, 1924, to March 31, 1925, the two engines produced 236,440 kilowatt hours of energy. In 1927, a 240 hp. Diesel of the same make was added. The following year, 1928-1929, the three engines produced 397,675 kwh., at a fuel return of 8.11 kwh. to a gallon.

To meet a steadily growing demand for energy, the plant, in 1931, replaced one of the 100 hp. engines with another F-M 240 hp. unit. Production the next fiscal year rose to 537,800 kwh., at an average of 9.33 kwh. to a gallon of oil.

In 1937, the remaining 100 hp. Diesel was replaced by a 600 hp., four-cylinder, F-M engine and, for good measure, the first 240 hp. engine was reconditioned so that it ran like a new machine. The generating equipment was then the same as today. In that same year, output for the first time reached a million kilowatt hours. In the next year, 1938-1939, the volume was 1,093,228 kwh. and the fuel return 10.6 kwh. to the gallon. The average cost per kilowatt hour delivered to consumer was 1.36 cents, compared with 1.51 cents the year before. Out-

put amounted to 1,470,200 kwh. in the latest fiscal year, ended March 31 last, at 11.8 kwh. per gallon of oil. Average cost delivered to consumer was 1.25 cents per kwh. Rates in Orange City today are those set in 1940 in the fourth reduction from the original rates of the municipal plant. These schedules are listed below:

The primary schedule reads: first 50 kilowatt hours per month, 6c net; next 150, 3c net; balance, 2c net.

Optional rate No. 1 reads: first 100 kwh., 4c net; next 100, 3.2c net; balance, 2c net; minimum of $4.00 a month. Optional Rate No. 2 is 2.4c net for all current used, with a $6.00 a month minimum.

The third optional rate is a power rate, reading: 2c net for the first 3,500 kwh. and 1.8c net for the balance. Among industries using considerable power are an oil-burner concern making brooders and heaters, a creamery, an ice-making plant, six hatcheries, a grain elevator and a feed mill.

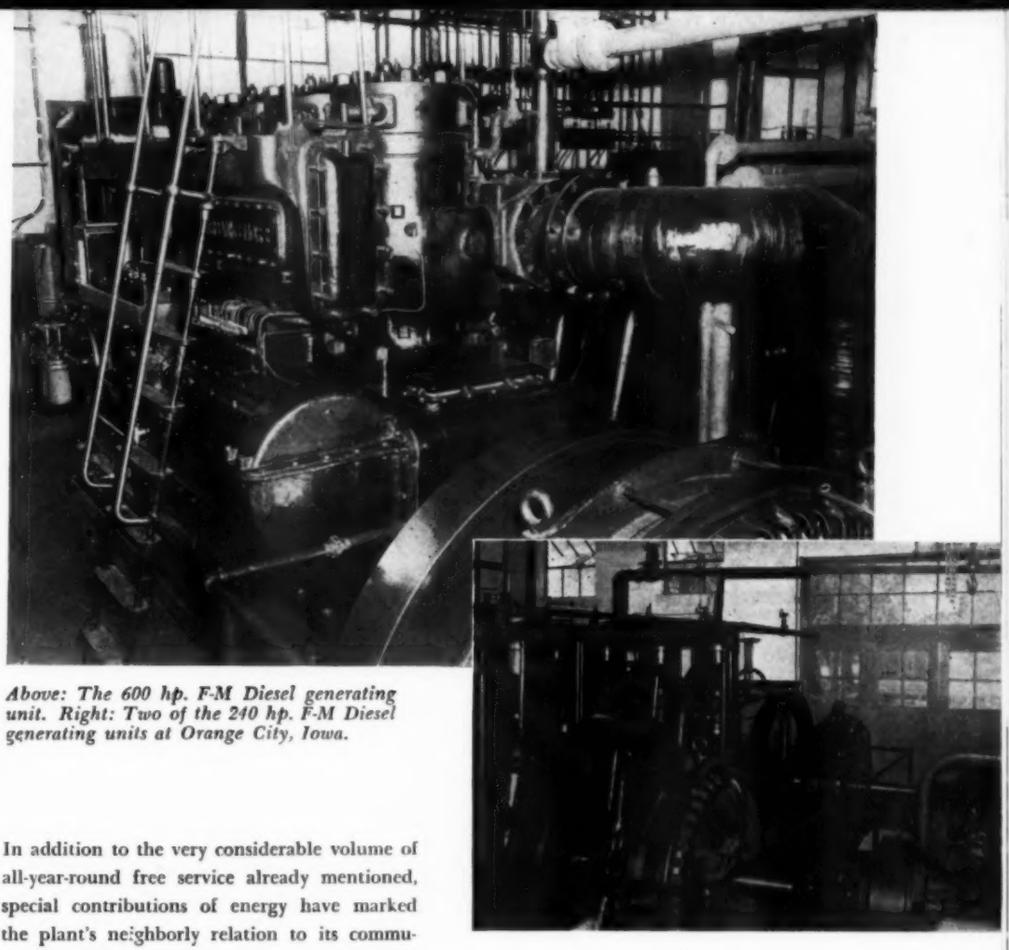
In today's primary schedule, the top rate of 6 cents compares with 12 cents in the schedule adopted in February, 1932, 14 cents in the schedule adopted in November, 1928, and 16 cents in the initial municipal schedule of February, 1924. The corresponding rate of the private utility in 1923 was 20 cents.

Some comparisons of actual costs based on specific consumptions of energy for lighting in the course of the twenty-two year period follow:

Kilowatt hours per month	14	25	60	100	150
Private utility (1923)..	$2.80	$5.00	$11.80	$19.00	$27.00
Municipal plant (1928)..	1.96	3.50	7.30	11.50	14.50
Municipal plant (1932)..	1.68	3.00	6.20	9.00	11.50
Municipal plant (11/1/40, 1945)	.84	1.50	3.30	4.50	6.00
Savings per month, at the present rates, over 1923	1.96	3.50	8.50	14.50	21.00

This tabulation does not take into account discounts of 20 per cent for prompt payment granted on monthly bills under the 1928 and 1932 rates.

In the last decade or so, the plant has made liberal permanent transfers of surplus earnings to other town purposes, such as $10,000 for waterworks improvements and $3,500 for fire-fighting equipment. Entries in the city clerk's books show $20,000 toward cost of the municipal hall, built in 1935. For the last year, the records show a transfer of $4,000 to the sewage disposal plant fund and one of $5,000 for the improvement fund for street repair. Besides, through the years, there have been transfers of various amounts to the town's general fund.



Above: The 600 hp. F-M Diesel generating unit. Right: Two of the 240 hp. F-M Diesel generating units at Orange City, Iowa.

In addition to the very considerable volume of all-year-round free service already mentioned, special contributions of energy have marked the plant's neighborly relation to its community. The courthouse tower and clock—Orange City is the county seat of Sioux County—gets free lighting. Before Pearl Harbor, floodlighting of the school's athletic field was contributed, also most lighting for park playground, and light and power for park floodlights and loud speakers on special occasions in summer.

For four consecutive years before 1941, all December billings were the same as for the month before.

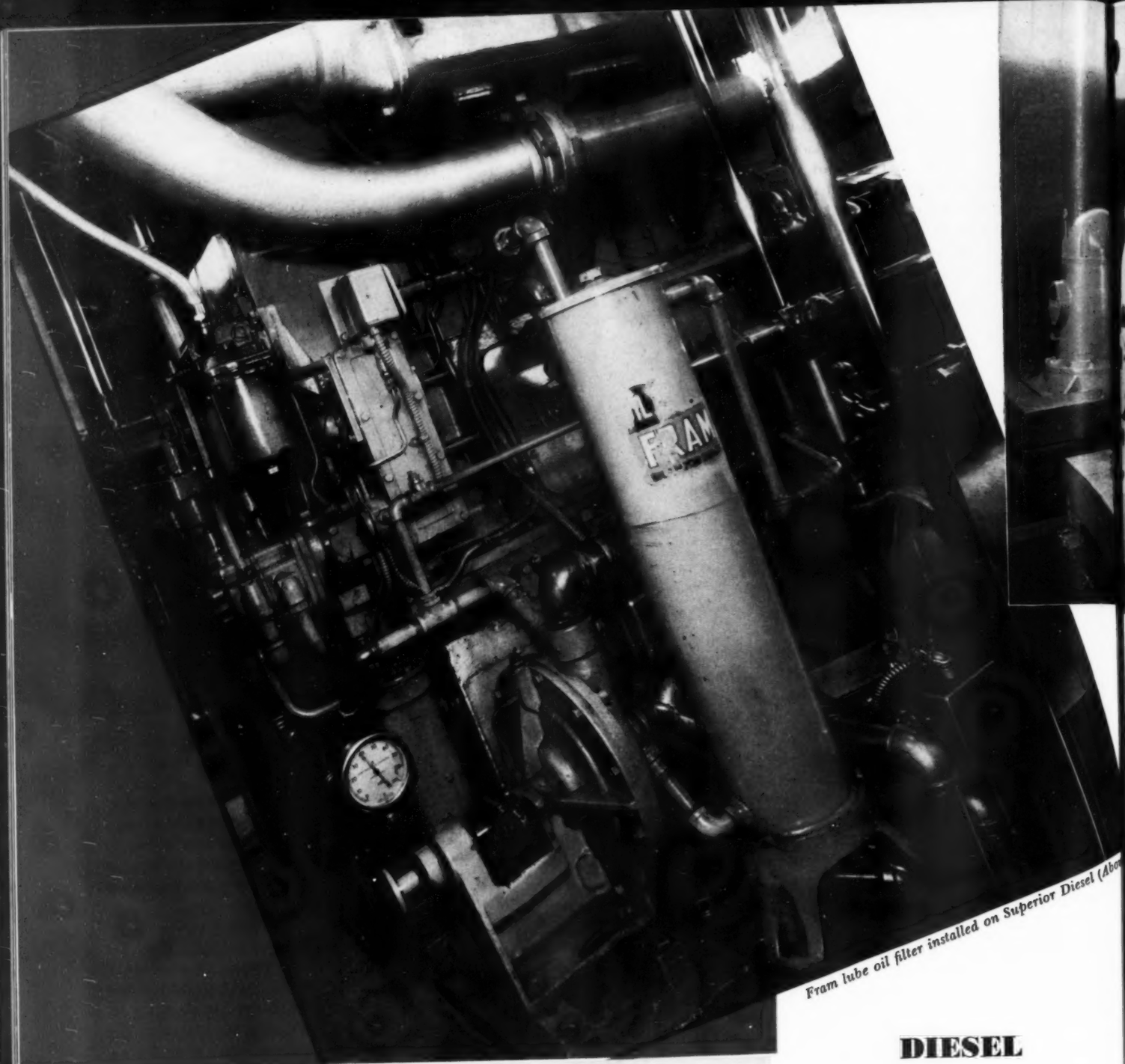
In December, 1941, the plant offered a gift of a 100-watt lamp to every consumer paying his bill for that month in person. Many consumers who had never before used such a light in their homes were so greatly pleased by the higher illumination that they upped their wattages, and their bills, thereafter. But what about these consumers who made a practice of mailing checks? They didn't mail them that month, one learns. They came in with their payments, asking, "How about that 100-watt lamp?" It was on the house. Who can resist an offer of something for nothing?

The mayor and a council direct the electric plant. Cor. Vande Steeg, who was mayor back in 1923 when the plant was constructed, has been mayor ever since. E. W. Kraii, member of the council then, has been a member ever since. Other council members are Dan Bruyn, John Mason, Edward Schreur and William Westra. Albert Roos has been superintendent of the plant from the beginning and is superintendent of the water plant as well. He ran the privately-owned steam plant that supplied electricity to the town before the days of the high-line service.

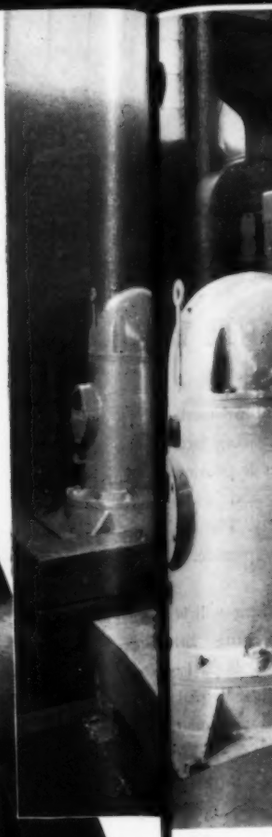
Operation of the municipal light plant has benefited the general financial structure of the town. The per capita tax for local purposes was $12.13 in 1922, before the plant was installed, $7.69 in 1932 and $6.24 in 1944. The general bond obligation of the town, not the light plant, was $101,680 in 1922. It was $42,600 at the end of 1932 and $13,000 on March 31 last. The $13,000 was in non-callable bonds, part due in 1947 and part in 1955, while the town had a cash balance on April 1 last of $31,787 and, besides, $15,000 in war bonds.

It was really out of debt, with a surplus of $33,787!

The high-line utility, in its losing fight against establishment of a municipal Diesel plant, had referred to Orange City as a "——— clannish Holland Dutch town, governed by a thick-headed, wooden-shoe mayor and a council of the same kind." The wooden-shoe Mayor and council seem to have done a job.



Fram lube oil filter installed on Superior Diesel (Abo



DIESEL LUBRICATION IMPROVED BY INDUSTRIAL-TYPE FILTERS

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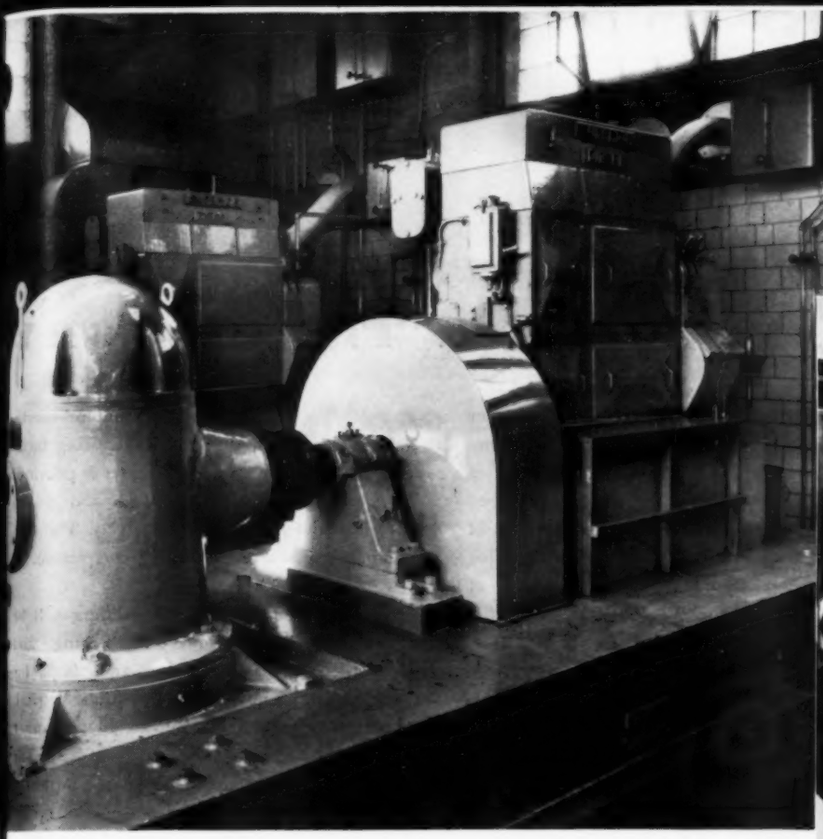
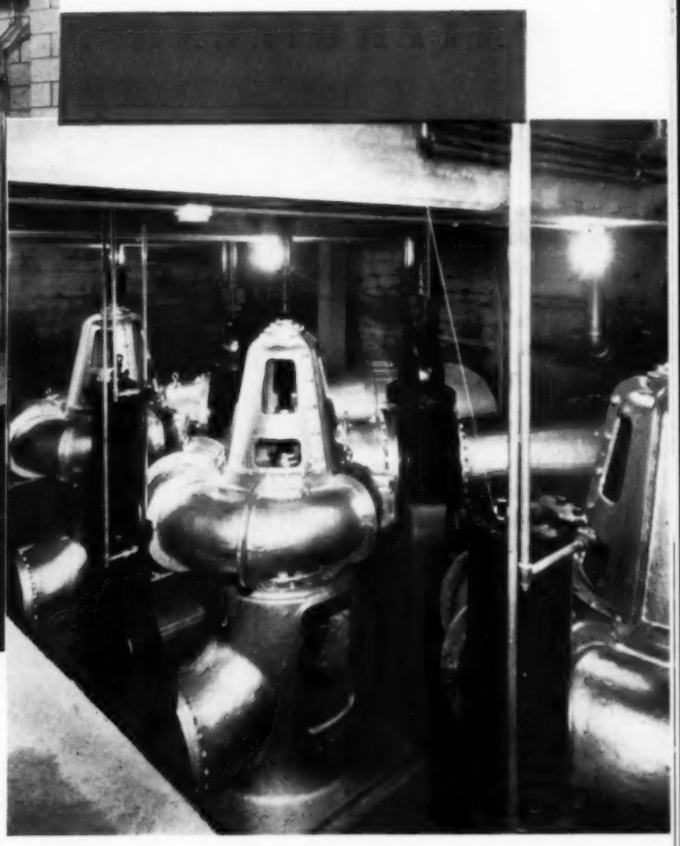




Engine room view shows 2 of the 3 108 hp. Superior Diesels and Farrel-Birmingham gear units.

(Right) Pump room showing 30 inch 21,000 gpm. Warren pumps.

By **BRUCE C. SISSON**

THE taxpayers of the city of Springfield, Massachusetts, have been saved considerable expense during the past few years by the successful solution of a lubrication problem. The story started in 1939 when a Diesel installation was decided upon for the new York Street pumping station in Springfield. A complete installation was made which included three 8-cylinder, 108 hp. Superior Diesels driving Warren pumps with a daily capacity of nearly 23 million gallons of sewage.

The people of Springfield may well be content with their York Street station. It is an attractive brick structure, as scrupulously clean within as without. It is located in a residential district and old New England elms shade its exterior. The exhaust from the Diesels is reduced to a muffled pulse by the noise-inhibiting action of the Maxim silencers. Interior vibration is practically nil by reason of the Hussman Spring Mountings under each Diesel unit. The flexible pipe connections are Titeflex.

The machinery arrangement within the plant shows excellent design. The Diesels, installed in the well-lighted engine room, drive the pumps, mounted at basement level, through vertical shafts, the horizontal-vertical power conversion being made through Farrel gear units.

In actual operation the plant did well from the start with the exception of some lubrication difficulties. The lubricating systems of all three Diesels had a tendency to form sludge in objectionable quantities and made constant cleaning of the individual engines imperative. Some mechanical failures resulted from plugged oil ducts but otherwise, the plant ran efficiently and well. In 1944, a filter expert inspected the Diesel installation and recommended the use of a larger filtering unit. So, on January 27, 1944 a Fram industrial-type filter was installed on one engine for a trial, and, according to James C. Tinti, the chief operator of the station, it was a complete success. At the end of 3,000 hours operation the lubricating system was inspected and found exceptionally clean. To date that engine has piled up 12,000 hours of trouble-free lubrication. In the meantime the two other Superior Diesels have been equipped with like filters and have shown the same fine results.

The basic operating figures on this Springfield plant are of special interest. For instance, fuel consumption is 3.5 gals. per hour, per engine. Lube consumption averages 1 gal. every 27 hours for each engine.

Socony Vacuum lube oil is used and the lube system is protected by U. S. temperature and pressure gages and a Penn Electric temperature and pressure alarm system.

Alnor pyrometers show engine exhaust temperatures. Twin Purolators filter the engine fuel supply, which is transferred by a Roper centrifugal pump. The plant is equipped with a Buffalo evaporative cooler and a Donaldson air filter. Engine starting air is supplied by Quincy and Westinghouse compressors at 200 psi. In order to facilitate overhaul operations a 5-ton high-speed Wright hoist is installed. As in all installations, the accessories and auxiliaries play a vital role in safe and efficient operation.

It is the constant application of initiative and imagination which tells the story of Diesel progress. Stories like this one of Springfield are to be found in hundreds of cities and towns over the land. The planning engineers of many municipalities who wish attractiveness as well as economical power may find their answer in a compact Diesel installation such as Springfield's York Street Station.

CATERPILLAR ANNOUNCES LARGEST EXPANSION PROGRAM IN ITS HISTORY

THE largest expansion program in the history of Caterpillar Tractor Co., one that will enlarge the floor area of the Peoria, Illinois plant by nearly 50%, was revealed recently in an announcement by L. B. Neumiller, President of the company.

Scheduled to be carried out progressively so that production can be increased as soon as possible, the expansion is expected to permit manufacture of more tractors by September of this year. Other benefits will be felt increasingly in succeeding months as little or no interruption to production and no interference with the introduction of new models is anticipated.

Completion of the huge undertaking, which will add approximately 180,000,000 square feet of floor space—about 41 acres—to the Peoria plant of the Caterpillar Tractor Co. is expected for the summer of 1948.

A new factory for the manufacture of Diesel engines is the major project in "Caterpillar's" record-breaking program. Planned to be superior to any other plant now in existence for the economical, efficient manufacture of Diesel engines, the factory will require 925,000 square feet under roof for the manufacture of improved models of present types and sizes in the company's line, as well as additional models already past the research, development and engineering stages. The new models, it is announced, will fit new fields of engine application and cover markets not presently served by "Caterpillar."

Among the other construction projects involved in the expansion program are:

A building with 400,000 square feet of floor area for the expansion of present tractor manufacturing facilities; a 150,000 square foot area addition to the parts department buildings; two buildings totaling nearly 90,000 square feet of floor space for additional heat-treating facilities, new metallurgical laboratory, and storage of jigs and fixtures; and a centrally located building containing 200,000 square feet of floor area, to house activities related to the maintenance of the entire plant and provide adequate quarters for the sales, advertising and service departments.

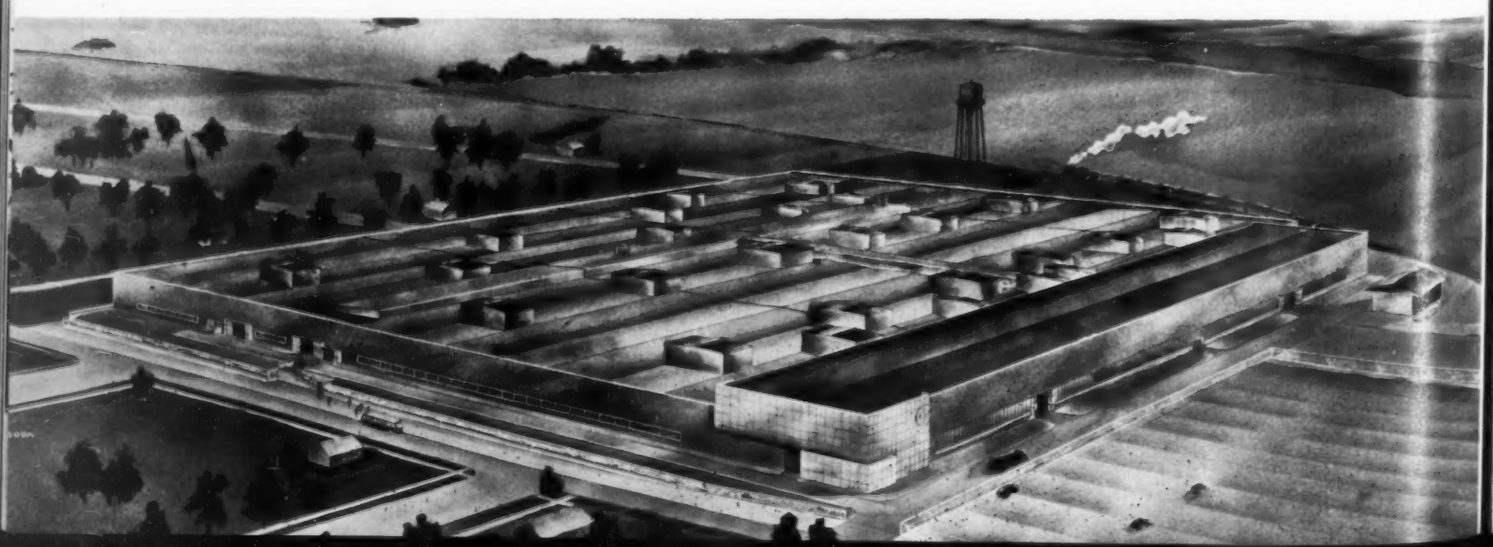
The new engine factory, to adjoin the present manufacturing area, has been planned to provide an ideal layout of all machining, assembling, testing, shipping and other related operations. The most modern developments in factory lighting, ventilation, air cleaning and noise reduction will be utilized. Lockers, washrooms and cafeterias will be elevated off the production floor, first aid quarters will be located for quick, easy access and a large paved parking area will be placed close to the factory entrances.

Transfer to the engine factory of all engine manufacturing operations now handled in the existing plant will also provide a greatly increased area for the manufacture of products other than engines.

The new building for expansion of tractor manufacturing facilities will permit extensive rearrangement of production lines to achieve better efficiency and greater capacity. The parts department addition provides greatly increased space for parts storage and will permit underroof loading of shipments into motor trucks. Ample space for additional heat-treating facilities, and storage of jigs and fixtures is provided by buildings containing 45,000 and 44,000 square feet of floor area, respectively. The storage building is already nearing completion.

In the new centrally located building will be concentrated maintenance engineering and supervision offices, storerooms and shops for handling work in connection with electrical, plumbing, woodworking, millwright and other maintenance and off-duty storage of all plant automotive equipment. In this same building, close to other office areas, will be adequate quarters for sales, advertising and service departments, a service department shop, space for shipment and mailing of advertising printed matter and an auditorium for meetings of plant supervisors, distributors or plant visitors. The auditorium will seat 1200 persons and will be equipped with public address system and motion picture projectors and screen. The company's famous display room will be extensively enlarged by removal of sales, advertising and service offices from present locations. Supplementary items of new construction also include enlargement of plant heating capacity and additions to the Factory Administration Building to care for the expanded operations.

Announcement of the expansion program culminates two years of study and planning by the company while production facilities were wholly devoted to war needs. Purchase of quantities of new, more efficient machine tools and other items of factory equipment, as well as some actual construction work, is already under way.



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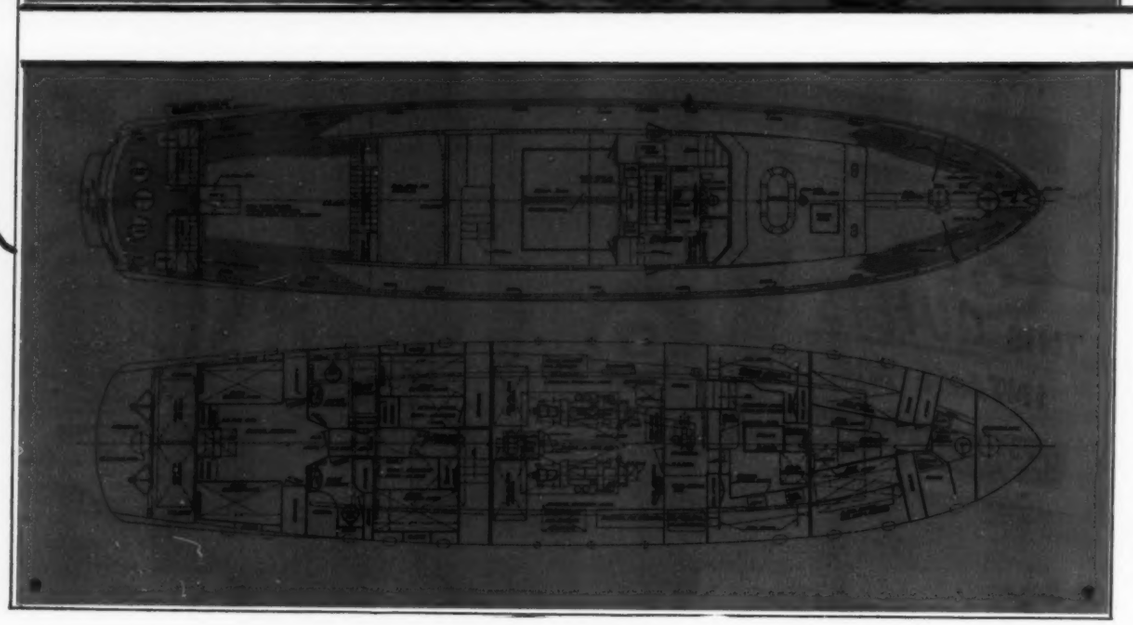
Artist's sketch of new 70 ft. Diesel yacht. She was designed by John Wells.



Deck plan of yacht shows ample accommodations for four persons, including the owner. The Diesel installation is compact.

NEW LUXURIOUS DIESEL YACHT

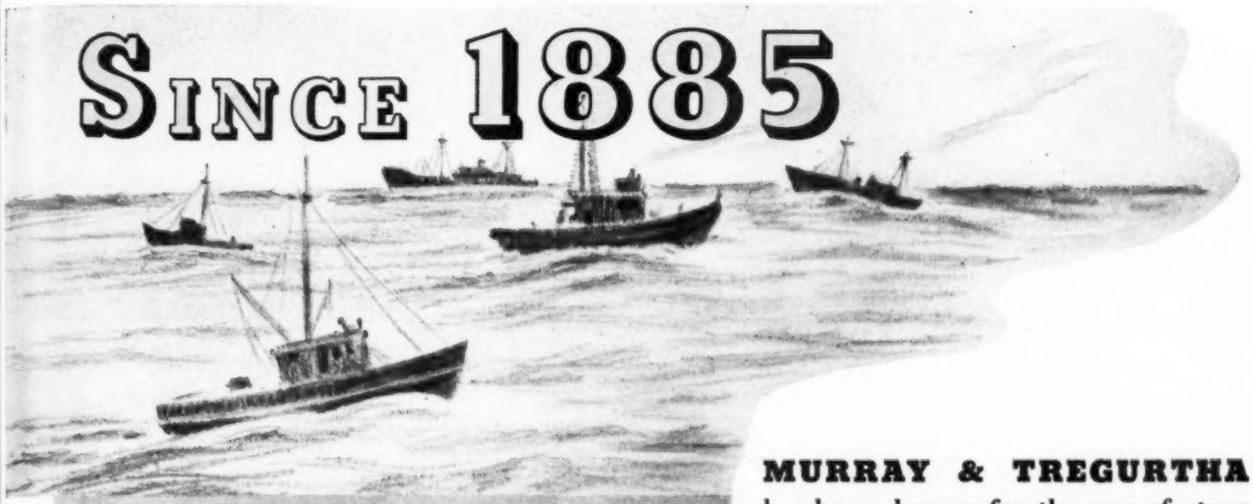
A 70-foot Diesel yacht designed by John H. Wells and built by Julius Peterson at Nyack, New York, has recently been delivered to its new owner in Mississippi. Two 200 hp., 2 cycle, General Motors Diesels supply propulsion and are capable of driving the yacht at 14 mph.

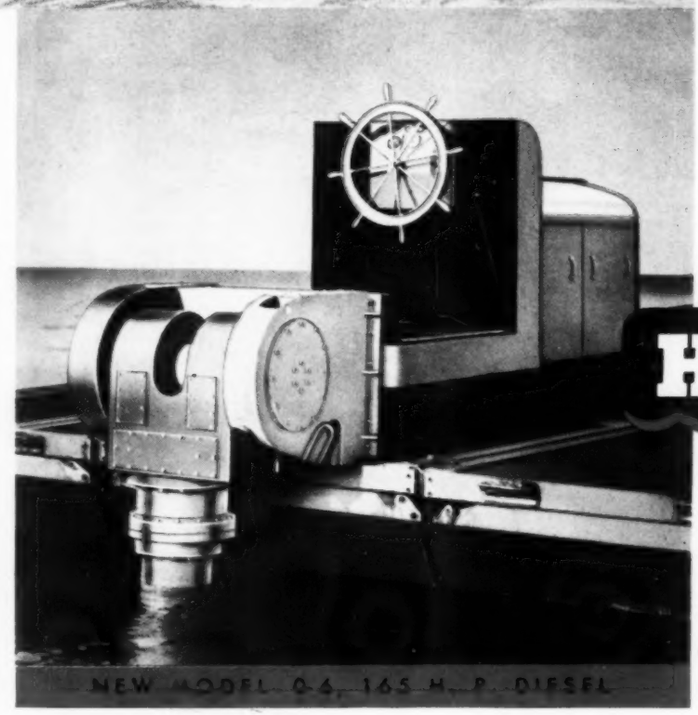
A 7 kw. U. S. Diesel generating plant supplies auxiliary electrical power.

The living quarters and motor room space are all insulated with a new cotton impregnated insulating material which sound and heat-proofs a major portion of the vessel. The yacht, with its two guest cabins, sleeps an owner's party of four very comfortably. There are ample accommodations for a crew of three forward.

The yacht is amply equipped with all the navigational safety devices. The equipment includes a ship-to-shore telephone, electric-eye, automatic steering, a radio direction finder and, in the near future, the owner contemplates installing radar equipment and a fathometer.

SINCE 1885





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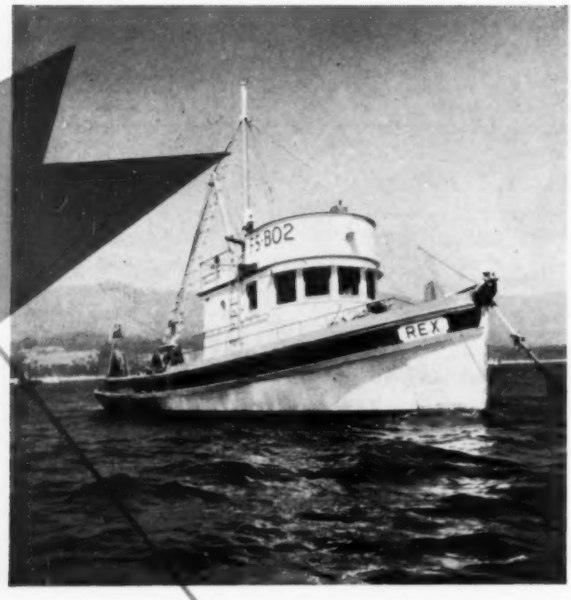
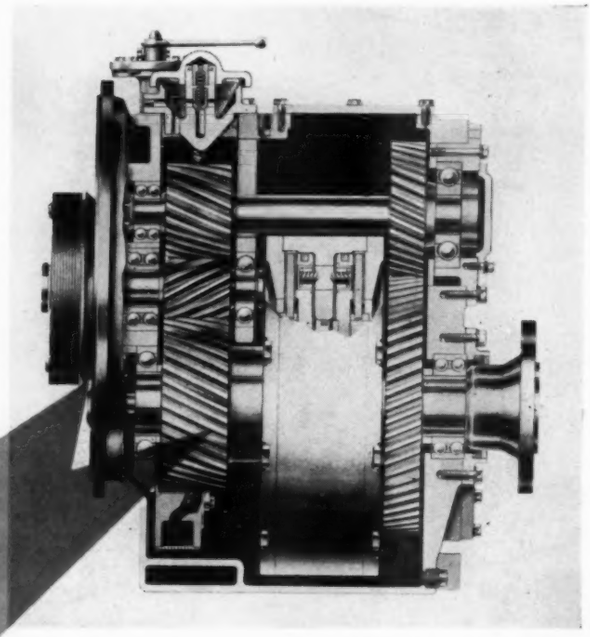


Fishing boat "Rex" at anchor off Santa Barbara. She is equipped with a Western Marine Gear which has been in service for 2000 hours.

NEW TYPE MARINE GEAR



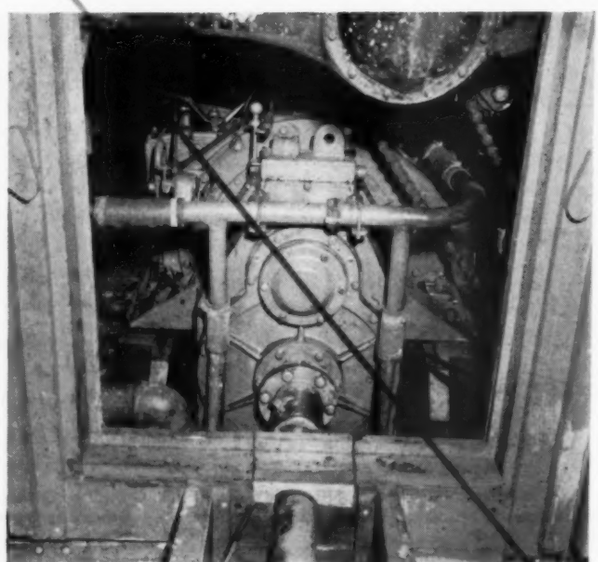
Cutaway view of Western Marine Gear showing gear train and clutch mechanism.

CONSIDERABLE interest is being shown in a new marine gear now being manufactured on the West Coast. This reverse and reduction gear is offered with various reduction ratios ranging from 1½ to 1 up to 4 to 1 and is capable of transmitting from 50 to 500 hp. The gear is completely self-contained and is hydraulically operated and controlled.

Several of these units have been installed for test purposes in West Coast fishing boats and have proved very successful. One of these units was carefully checked after 2000 hrs. operation and it was found that the clutch plates only showed .003 to .005 of an inch wear. An interesting safety device is incorporated which causes the clutch to disengage automatically in the event that the oil level is low in the unit.

The gear is completely self-contained in a streamlined housing. The five gears which make it up are of the helical type and are straddle-mounted on extra capacity anti-friction bearings. There are two hydraulically-operated single plate wet-type clutches on the output shaft. Hydraulic operation together with the wet-type clutch eliminates shock, and also facilitates the use of conveniently placed remote controls of any type. Only ten pounds pressure on a six-inch radius lever is required to change direction from ahead to astern. Where auxiliary drives are required, as many as four power takeoffs can be mounted on the gear unit.

In addition to the test unit installed in the *Rex*, several others have been installed on other fishing boats and tugs with the same good results.



View of the gear installation aboard the "Rex" made from the aft part of the vessel.

New Hulett Towboat is named for its Viking Diesel Power Plant

STERLING DIESEL ENGINE FEATURES

1 STRONGER CONSTRUCTION Sterling one piece block and base construction gives Viking Diesels greater strength.

2 DEPENDABILITY...In the Sterling factories the very latest in machine tools and test equipment are employed. Every part of a Sterling Viking Diesel has been factory and service tested... assuring uninterrupted, continuous heavy duty operation.

3 ACCESSIBILITY... All working parts... bearings, camshaft, valves, injectors... are readily accessible for normal servicing. Maintenance costs are low.

4 REDUCED WEIGHT PER HP. Reduced weight is accomplished through design refinement... giving a clean, sturdy, easy-to-handle engine delivering smooth performance through its entire power range.

5 COMPACT DESIGN... Sterling Viking Diesels are compact... save space... are easy to install.

6 HIGH EFFICIENCY... Operating efficiency of Sterling Viking Diesels is high when you buy them... stays high as you use them year after year... the result of expert design, competent workmanship, select materials.

In selecting twin Sterling Viking Diesels to power the heavy duty "VIKING" towboat, economy of operation, dependability and accessibility for normal servicing were major considerations. On all counts, the Viking Diesel measured up to the most exacting requirements.

For nearly half a century, Sterling has led the way in marine power developments. Modern Viking Diesels are a natural outgrowth of those many years of specialization. That is why Sterling Viking Diesel stamina, dependability and operating economy are unsurpassed.

That is why it will pay you to consult Sterling about your diesel power requirements.

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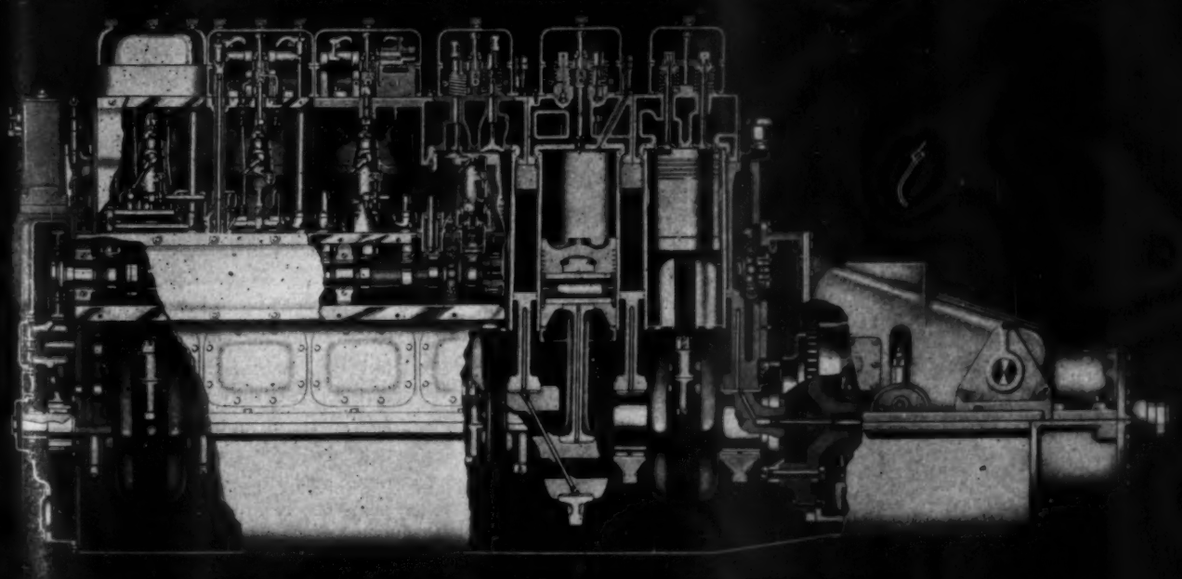
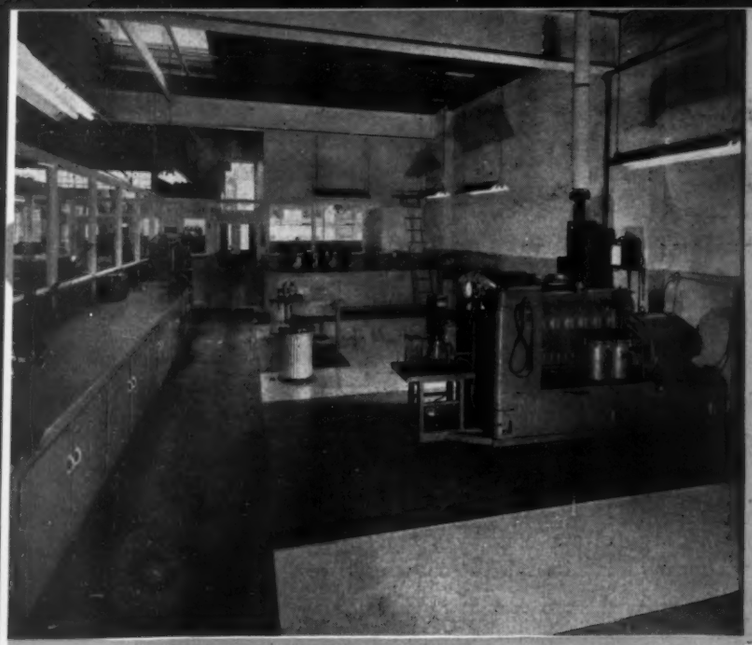


A sectional view of the Sterling Viking Diesel. The Sterling line includes both six and eight cylinder Viking Diesel engines—turbo-supercharged or unsupercharged—in a power range from 200 to 660 hp.



New York branch of Marquette Governor Service. Reconditioned governor is being tested.

West Coast Service Station at Emeryville, California. General Motors Diesel is seen at left.

EFFECTIVE GOVERNOR SERVICE

THE Marquette Metal Products Company recently inaugurated a unique service to users of its Hydraulic Governors. This company has established service stations in strategic locations, making it possible for government agencies and commercial vessel operators to get prompt, dependable servicing of governors.

Each governor is expertly examined and reconditioned by factory trained men. The unit is completely dismantled, and all parts are thoroughly cleaned and checked. It is then re-

At Marquette's New Orleans Station 3 reconditioned governors await their turn on the test stand, lower right.

assembled and placed on a Diesel engine operated governor test stand, where it is properly tested and adjusted to meet the exact original engine requirements. When it is again installed, the operator is assured of satisfactory governor operation.

The company has been operating these service stations long enough to definitely establish the fact that their methods are economical and entirely satisfactory to vessel operators. This type of service is not only speedy, but eliminates the danger of having governors reconditioned and adjusted by inexperienced personnel. The service stations are conveniently located at 4512 San Pablo Avenue, Emeryville, Calif., across the Bay from San Francisco; 835 Howard Avenue, New Orleans; and 47-49 Wooster Street, New York.

TWIN DISC
CLUTCHES AND HYDRAULIC DRIVES
REG. U.S. PAT. OFF.

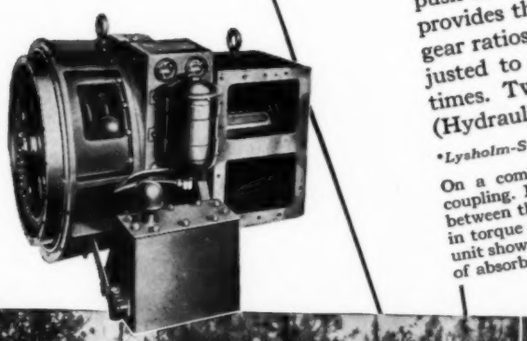
Hydraulic Drives

assure smooth, flexible power

When dozing out stumps, the tractor hits an obstruction at high speeds and all working parts receive a solid shock. These shocks are cushioned with the installation of a Twin Disc Hydraulic Torque Converter,* such as in the Allis-Chalmers tractor pictured below. The hydraulic drive provides a fluid cushion which protects the entire tractor against destructive shocks. At the same time, the torque converter's "five-to-one" torque multiplication means steadily increasing push at reduced tractor speeds. The torque converter also provides the tractor with the equal of an *unlimited* set of gear ratios within a fixed speed range . . . automatically adjusted to give the most efficient power application at all times. TWIN DISC CLUTCH COMPANY, Racine, Wisconsin (Hydraulic Division, Rockford, Illinois).

*Lysholm-Smith type

On a compressor, smoothness and flexibility are assured by a hydraulic coupling. Here, the engine operates at a governed speed, but the coupling between the engine and compressor unit is subject to considerable variations in torque transmitted. In compressors, such as the portable Gardner-Denver unit shown here, the Twin Disc Hydraulic Coupling has the distinct advantage of absorbing peak loads, isolating variations and preventing engine stalling.



TWIN DISC
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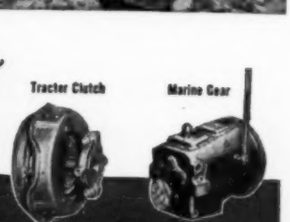


SPECIALISTS IN INDUSTRIAL CLUTCHES SINCE 1918

NEW DIESEL TOWBOAT

The "Chilli Simpson," powered with a pair of Cooper-Bessemer Diesels, was built by St. Louis Shipbuilding and Steel Company for Simpson Oil Company.

FOR RIVER SERVICE

By WILL H. FULLERTON

ONE of the first large towboats to be delivered to a private owner since V-J Day is the 1900 hp. Twin Screw Diesel towboat *Chilli Simpson* designed and built by the St. Louis Shipbuilding and Steel Company for the Simpson Oil Company of Charleston, Missouri.

The builder who has designed and constructed the streamlined towboats M/V *Henry S. Sturgis* and *Sohioan* has in this case changed from the streamlined design to a new "functional" design using flat vertical sides with well rounded corners and a balanced proportion of deckhouse and hull to form a very attractive modern towboat.

In working out this new design the St. Louis Shipbuilding and Steel Company has followed its practice of making each towboat different in appearance from any other towboat on the river.

The *Chilli Simpson* has an all welded hull 112 ft. long, 28 ft. beam, and 9 ft. deep with a loaded draft of 6 ft. 6 in. with a scow bow and a St. Louis Shipbuilding and Steel Company stern. The deckhouse is of steel lined with plywood, insulated with 2 in. of Fiberglass insulation.

Quarters are provided for 10 on the main deck with a bathroom for the crew and one for the cooks and the upper deck has quarters for two pilots, two engineers and the captain with one connecting bathroom. The galley and messroom is one large room on the main deck with a serving table across one end. This arrangement is the same as on the other two towboats owned by the Simpson Towing Company.

The *Chilli Simpson* is powered with two Cooper-Bessemer turbocharged, 8-cylinder 13 x 16 Diesel engines each developing 1110 hp. at 450 rpm. The engines will be operated at 375 rpm. at which speed they will develop 925 hp. each. The selection of these engines was based on the owner's experience with the same make of engine in his other two towboats, the *Harry Simpson* and the *Gladys Simpson* except that on the *Chilli Simpson* the Cooper-Bessemer Diesels are turbocharged to develop more horsepower. The engines are equipped with Maxim exhaust silencers and Coppus air intake filters. The engines will be located near the aft end of the boat the same as on all the recent towboats of St. Louis Shipbuilding and Steel Company design. This type of layout requires only a short run of propeller shafting and keeps all operating noise in the aft end of the boat away from the crew's quarters.

The circulating water cooling system for the main engines is of the skin cooling type and the lubricating oil coolers are Ross shell and tube type coolers with the lubricating oil pump and the raw water pump for lube oil cooling both being built-in on the main engines. By using entirely separate cooling systems for the circulating water and the lubricating oil it is possible to better control the temperatures of the

two systems thus giving better engine operation. A set of 6 Luber-Finer filters were installed for filtering all of the fuel oil for the main engines. The starting air for the *Chilli Simpson* is supplied by two Gardner-Denver compressors mounted on and driven by the main engines and in addition a Fairbanks-Morse compressor is furnished for stand-by use. This compressor is V-belted to a Caterpillar Diesel which also drives a 20 hp. Fairbanks-Morse fire and bilge pump with a capacity of 150 gpm. at 110 pounds pressure. The air tanks for the boat were manufactured by the shipyard.

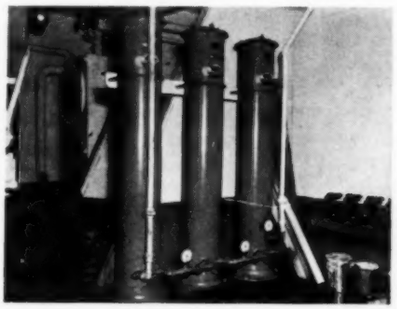
The fuel bunkers have a capacity of 33,000 gallons and in addition a fuel oil transfer pump is installed to pump fuel oil into the bunkers from the oil barges while enroute.

The steering system is of electro-hydraulic type with mechanical follow-up and was designed by St. Louis Shipbuilding and Steel Company. The rudders are of the builder's standard construction and arrangement with 2 steering rudders and 4 backing rudders with the steering rudders and backing rudders controlled by separate rams and levers.

The propellers are 84 in. in diameter, 3 blade of the wide blade pattern as designed and manufactured by the St. Louis Shipbuilding and Steel Company. The propeller shaft steady bearings are of the heavy rigid pillow block type furnished by The Medart Company, the stern tube bearings are of bronze, grease lubricated and the stern strut bearings are Goodrich Cutless Rubber Bearings.

The electric power is supplied by two 10 kw. 125 volt d-c Fairbanks-Morse generators V-belted to a stub shaft extension on the forward end of the main engines. In addition a 15 kw. generator and 7½ kw. generator are installed on the boat, each generator being driven by a Caterpillar 30 hp. Diesel engine. A 56-cell, 112 volt Philco battery "floats on the line" and all electric circuits are controlled by a switchboard manufactured by Wm. Wurdack Electric Manufacturing Company of St. Louis. The voltage regulators for the tailshaft generators are of the safety car heating type.

house view at time of maiden run.



One of two sets of Luber-Finer fuel oil filters.

Upper engine room looking forward over tops of the two C-B main Diesels.

Lower engine room looking aft between the two main engines.

Conducted by R. L. GREGORY*

"TROUBLE SHOOTING" — PART 2

DUE to the various makes, types and sizes of Diesel units, it would be almost impossible to cover all the conditions which a "trouble shooter" might run into on any unit, in a discussion of this nature. However there are certain characteristics which one following this type of work, should possess. First, he must be thoroughly familiar with the integral parts of the units under his care. Secondly, he must know the function of those parts in normal operation, and lastly he must know how to remedy any trouble which may interfere with the normal function of these parts in operation.

In discussing this subject, the writer will confine his remarks to an air injection, two cycle, cross-head type of unit, of the larger size, used in the larger Diesel plants, and confine the problems of "trouble shooting" to that type of unit. There are certain conditions which arise in operation which may be applicable to smaller and different types of units, but such conditions are general and may apply in part to all types of Diesels. However in the main, the following discussion will be confined to the above mentioned type of Diesel.

Certain fundamental conditions are maintained in all Diesels when operating, and probably the first to be considered is that of keeping the exhaust free from smoke. Assuming that we are discussing units of from 2000 to 3600 hp., let us take up the points in operation which will cause a smoky exhaust. These may be listed as follows:

1. Overloaded unit.
2. Insufficient blast pressure.
3. Dirty or clogged atomizer.
4. Defective fuel needle valves.
5. Load not evenly distributed among the cylinders.
6. Compression too low.
7. Improper clearance of fuel lever rollers.
8. Improper function of fuel pumps.
9. Defective scavenging.
10. Improper fuel.
11. Excessive blow-by.
12. Improper temperatures.

* *Chief Engineer, Municipal Water and Light Plant, Hillsdale, Michigan.*

There are other causes for a smoky exhaust, but in the main these are the principal ones. In operating an air injection unit, there is a definite relationship between the load and blast pressure. The maximum amount of blast pressure in such a unit should run around 1100 pounds at full load. If an overload is thrown upon the unit, and the blast pressure has reached its maximum at full load, smoke will likely appear in the exhaust. Blast pressure should be varied according to load, with approximately 600 pounds at no load, and under no condition should less than 575 pounds of blast pressure be used, since below that pressure combustion is imperfect, the same as it is at overload, and a smoky exhaust will result.

Dirty Atomizers and Defective Needle Valves

A dirty atomizer or defective needle valve will invariably result in a smoky exhaust, since in either case combustion is imperfect in the cylinder effected. One way of telling which cylinder is thus affected is by cutting out the fuel pump on the suspected cylinder. The exhaust temperature will indicate which cylinder is operating under imperfect combustion.

Load Not Evenly Distributed

This too is generally discernible by checking exhaust temperatures. If the temperature on the exhaust of any particular cylinder is running considerably lower than the rest, it is an indication that that cylinder is not doing its share of the work. Also, if it is running higher than the remaining cylinders it is an indication of trouble, not necessarily in this case a trouble of overload as it might be due to insufficient cooling or blow-by. The fuel apparatus, especially the fuel rod should be checked to see that the particular cylinder which is lagging is getting its share of fuel. Often trouble is found in the fuel check valve leaking. In such instances the fuel line to that particular pump can be closed, the pump cut out and the check valve removed and examined.

Compression Too Low

This may be due to several causes, worn rings, cylinders, worn pistons, piston rings stuck, insufficient lubrication, shifting of the cams, etc. In any instance an indicator card will generally give this situation, and repairs should be effected as soon as possible.

Improper Clearance of Fuel Lever Rollers

This clearance is generally designated by the manufacturer when the engine is put in operation and the value as set up, maintained. Whenever this mechanism is removed for purpose of repairs and reassembled, this clearance should be checked, and if found off, proper adjustments made.

Improper Function of the Fuel Pump

Any improper function of the fuel pump will be immediately noticed by an unbalanced load condition. Worn parts, clogged lines, leaky lines, worn check valves, etc., affect the proper functions of the fuel pumps and should be immediately corrected as soon as the cause for trouble is determined.

Defective Scavenging

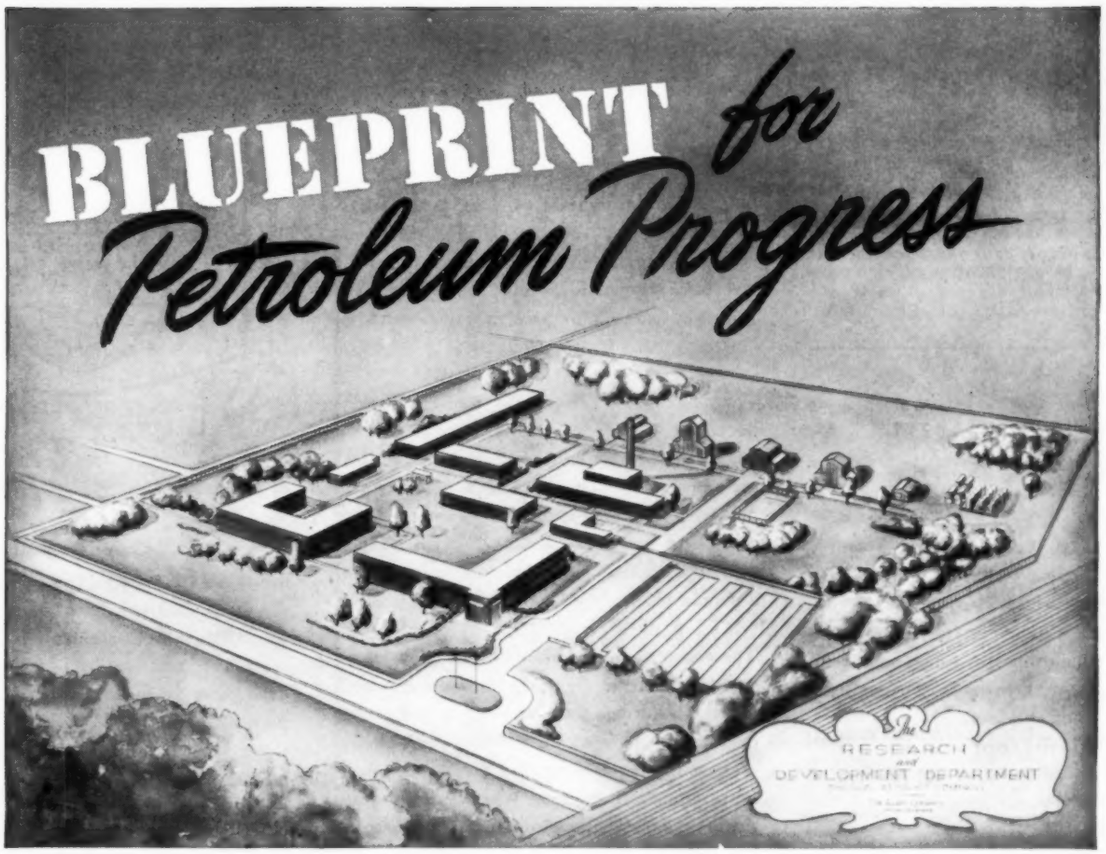
In order that an air injection unit may function properly, scavenging apparatus must be kept in good condition. A loss of scavenging air is usually discernible by the scavenging air gauge and may be due to faulty scavenging valves, improper seating, or leakage. This may prove serious if not remedied as soon as possible, and the defects removed.

Improper Fuel

If the fuel is not of the correct viscosity, the engine may smoke due to faulty atomization. The fuel must also be of such viscosity that it will spray properly and mix with the air. This can often be corrected by adjusting the injection pressure. A great deal depends upon the type of injection nozzles and valves.

Excessive Blow-by

We are all aware of the conditions which cause excessive blow-by and a great deal of this can be eliminated by periodic inspection of rings, pistons and liners, and the maintaining of these parts in good mechanical order. Excessive blow-by is usually easily detected by increased oil temperatures and heating on any particular cylinder. This links in with excessive temperatures and the cooling system.



MOVING ahead with the resumption of peace-time industrial activity, Sinclair assures its customers of still greater product quality and performance with construction of an elaborate new research center at Harvey, Illinois.

In this great petroleum laboratory, recognized technological experts will have at their disposal the very latest facilities for the solution of the most difficult and specific lubrication problems. From the research work here, you may expect consistently top performance from Sinclair lubricants developed for every type of industrial use.

This research center is evidence that Sinclair means it when it says "Better Products . . . Better Service."

SINCLAIR INDUSTRIAL OILS

FOR FULL INFORMATION OR LUBRICATION COUNSEL WRITE SINCLAIR REFINING COMPANY, 630 FIFTH AVENUE, NEW YORK 20, N. Y.

Exchange Your Diesel Maintenance Ideas

Conducted by R. L. GREGORY

Editor's Note: In this department we provide a meeting place where Diesel and Gas engine operators may exchange mutually helpful maintenance experiences to keep our engines in top condition. Mr. Gregory edits your material and adds constructive suggestions from his own wide experience. This is your department—mail your contributions direct to DIESEL PROGRESS.

Maintenance of Fuel and Lube Oil Filters

THERE has been quite a trend on the part of Diesel plants, during the past few months especially, to improve their fuel and lube oil conditions by means of filtering. While the filtering of fuel and lube oils is by no means a new thing, the improvements which have been made lately on this type of equipment have been so great, and the results so much improved, that no Diesel engine should be operating without a good fuel and lube oil filter as a part of the equipment.

However these filters need the same attention and proper maintenance as the engine if efficient results are to be obtained. Installing the filter is not enough. Periodic inspection must be maintained and the conditions under which the purifiers operate must be watched. Most of the types of filters now used are those which are composed of a filter tank, with thermostatically controlled heating units installed for heating the fuel or oil. The oil or fuel is forced into the tank by means of a pump, then through filter cartridges which are charged with retrol, cranite or some such filtering agent, such cartridge being built of canvas, to hold the filtering agent, and the whole placed over a wire and felt core.

The longevity of these filtering cartridges depends upon the type of fuel or oil being filtered, the temperature of that fuel or oil and the pressure at which it is forced through the filtering agent. One cannot expect to pass cold, heavy fuel under low pressure, and get satisfactory results. When heavy fuel or lube oil is being filtered it must be heated to a point where it will flow freely, and be pumped at a pressure high enough to force it through the filtering agent.

One of the greatest impediments to proper filtering in a filter of this type is moisture. Moisture has a tendency to close up the pores or passages of the filtering agent which then becomes muddy and no amount of pressure will force the fuel or lubricant through it. Therefore one of the main things to watch is moisture. Keep it at a minimum.

The more fluid the fuel or lubricant being treated, the better and faster the filtering process. If the fuel or lubricant is cool, there is a tendency to coat over the canvas container holding the filtering agent and thus impede the flow of the fuel or oil through it. This is especially true of fuels and lubricants derived from a parafin base.

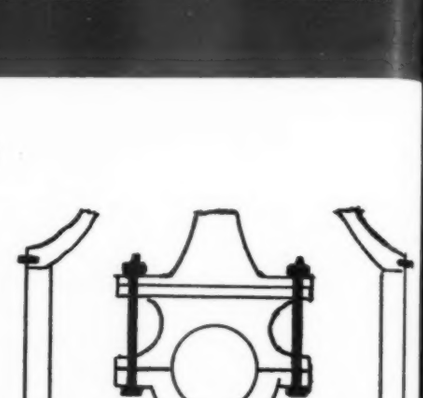
The higher the temperature of the fuel or lubricant being filtered the less the pressure required to force it through the agent. There is a gauge provided on most of these filters which shows the pressure required to force the fuel or lubricant through the agent. When this pressure reaches the maximum allowable point as recommended by the manufacturer, it is an indication that the fluid being filtered is either too cool or if the temperature is high enough, it is an indication that the filtering agent is clogged and the charge should be changed. Close observance of these conditions should be maintained in order to get the longest life possible out of the filtering agent.

Removal of Crank Bearing Cap

THE accompanying sketch shows a method used by M. L. Monson, of the Fosston, Minnesota Municipal plant in removing a bearing cap from one of the crank bearings, the work being accomplished by one man. Mr. Monson's explanation follows:

"The accompanying sketch shows a quarter inch guy wire cable, cut long enough to reach from one side of the crank case wall to the other, so that when fastened as shown, the cable will have a little slack in it. Loops are made on each end of the cable and are fastened over the hand hole cover studs on each side of the engine.

"After the crank pin bolts have been removed,



the bearing cap is lowered so that it rests on the cable. The cap can now be pulled out of the crank case by sliding it along the cable, which acts as both a guide and a support."

The above is one method of doing the job. Another easy method of accomplishing the same work, but which gives a little more rigid support in removal of the cap is as follows: Cut a piece of two by eight plank, just long enough to fit in between the sloping sides of the crankcase walls at a distance of about two inches below the cap. As the nuts are removed from the bolts, the cap drops down and rests on the plank, with the bolts dropping clear along the side of the plank.

With the cap resting solidly on the plank, it can then be easily handled and slid out of the way for removal from the crank case. Use of the plank gives good support in reinstalling since the cap can be slid back in position without holding up the weight, leaving space free for reinstalling the bolts.

In larger engines with longer stroke, it is always well to have the piston pretty well toward bottom stroke when removing connecting rod bearings. After the bolts have been removed and the cap is resting on the plank, free from the crank, then by use of either the bearing rig or motor operated mechanism, the crank can be raised back up toward top stroke position, thus giving more room for the removal of the cap. However in so doing one must be sure that the crank is moved in the right direction, going up with the piston instead of down, in order that the cap resting on the plank will not be damaged.

Nordberg Sells A Big Engine

JUST as this issue goes to press, we learn that the Lautero Nitrate Co. Ltd., Tocopilla, Chile, a subsidiary of the Anglo Chilean Nitrate Co., has completed negotiations with the Nordberg Mfg. Co. for the purchase of a 10 cylinder, 29 in. bore, 40 in. stroke, 164 rpm. Diesel of 7100 hp. rating to be direct connected to a 5000 kw. General Electric flywheel-type generator.

Superdraulic Organizer To Promote Fluid Motors and Transmissions

SUPERDRAULIC Corporation recently held its first stockholders meeting and elected a board of directors consisting of Harry L. Wise, Luke C. Leonard, Lloyd I. LaDriere, Robert Wise, George P. Grutsis, Ted Nagle, John R. Davis and James F. Hoffer . . . which in turn appointed the following officers of the corporation: Harry L. Wise, President and General Manager; Robert W. Wise, Treasurer; James Hoffer, Vice President in charge of engineering; Ted Nagle, Vice President-director of sales and advertising and John R. Davis, Secretary.

Harry L. Wise

Superdraulic Corporation was organized to manufacture hydraulic pumps, fluid motors and hydraulic transmissions that revolutionize potentials in the field of hydraulics, representing developments of intensive research and experimentation by the parent organization, Hydraulic Machinery, Inc., over the last 3½ years. . . . A financial program directed by Mr. Luke Leonard for Superdraulic will be devoted to the expansion of their facilities to take care of demands in the industrial, automotive, railroad, petroleum, plastic, marine and Diesel fields. Output has already been started on a hydraulic pump that, while only 9 in. in diameter and small enough for a man to handle easily, develops 5,000 pound pressure per square inch and 40 hp. which more than doubles pressures and horsepower now available in pumps of similar size.

NEW PRODUCTION METHOD SAVES POROUS CASTINGS

This new method is particularly applicable to engine blocks and heads, valve and pump housings and other castings intended to retain liquids or air under pressure.

K&W METHOD OF RECLAIMING POROUS CASTINGS

. . . is effective on practically all metals and alloys.

. . . fits admirably into mechanized production techniques—it is fast!

. . . costs little . . . often less than 20c in labor and material to recover a casting costing as much as $15.00 at the point of rejection.

Visit booth 1210 at the 1946 Foundry Congress and Show, Cleveland, May 6-10

IMPORTANT The statements made here are taken from the daily experience of some of industry's most important production foundries.

K&W METHOD OF RECLAIMING POROUS CASTINGS has been used successfully by the automotive industry for more than 10 years.

For further information, write

KERKLING & COMPANY

Industrial Division: 334 N. Ogden Ave., Chicago 7, Illinois
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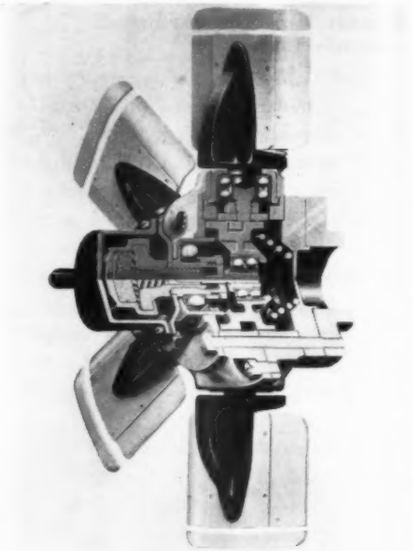
Sterling Acquires Superior High Speed Diesel Line

AS this issue goes to press, word comes of the purchase, by Sterling Engine Company, of National Supply Company's line of Superior high-speed Diesels with their manufacturing facilities. The deal involves the movement of equipment valued at close to 2-million dollars, from the National Supply Company's Springfield, Ohio plant to the Sterling plant at Buffalo.

The line of Diesels changing ownership in this transaction is currently known as Superior Models A and D, consisting of some 20 industrial and marine types ranging from 20 to 230 hp. Added to the present Viking Diesel line, this gives Sterling a full range of engines from 20 to 660 hp. for stationary, oil field and both marine and land transportation applications and places Sterling in a dominant position as a Diesel engine manufacturer.

Improved Thermo-Control Fan

A NEW model Evans Thermo-Control Fan has been engineered to simplify installation of the Thermo-Control Fan in existing engine mounts when necessary clearances are available, according to A. R. Lintern, Manager, Thermo-Aire Division. To install the new model, it is only necessary to remove the old fan from the fan hub and remount the Thermo-Control Fan with the correct mounting flange to fit the hub.



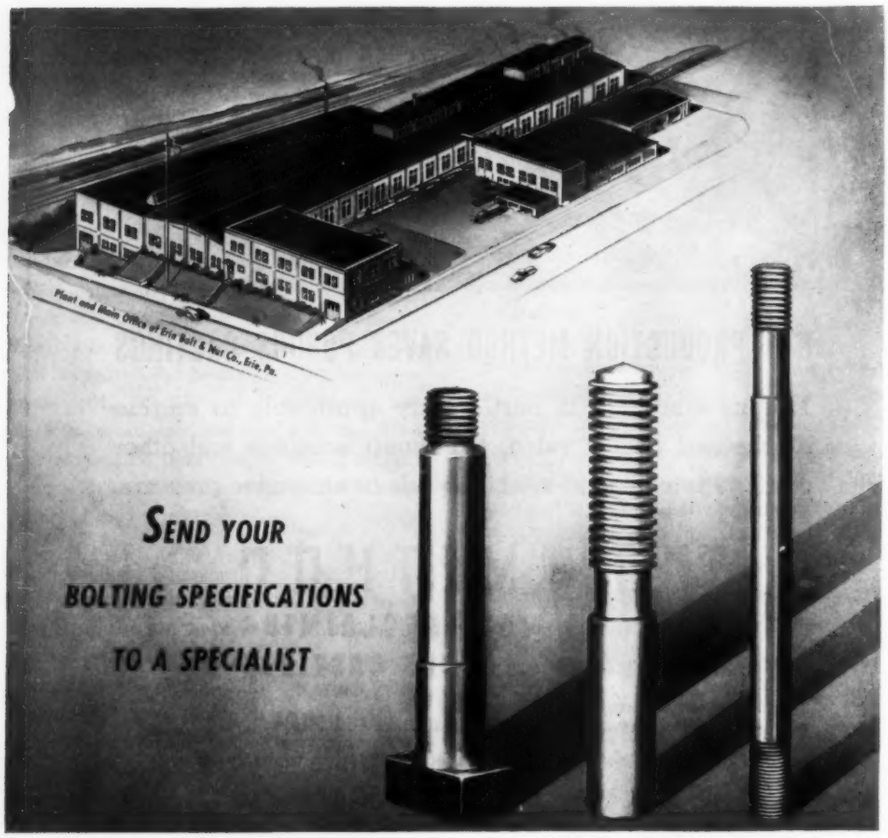
Cutaway view of Evans Thermo-Control Fan

The Thermo-Control Fan is a variable pitch Self-Adjusting fan operated by a built-in thermal power element. Adjusting itself to changes in engine and ambient temperature, the fan maintains near constant engine operating temperature, increasing horsepower output, reducing fuel, lubricating oil and maintenance costs and eliminating nearly all formation of sludge deposits in engine and lubricating oil. The fan is manufactured in four, six and eight blade models.

Evans Thermo-Control Fan is designed for installation on such heavy-duty equipment as large trucks and buses, Diesel-electric locomotives, generators, pumping units, shovels, tractors and cranes, and mobile and stationary industrial equipment.

Buda Diesels for 80-Ft. Power Scows

UNDER the heading, "West Coast Diesel News," an item appeared in the April issue of DIESEL PROGRESS stating that Caterpillar Diesels would power two 80-ft. power scows building at The Weldit Tank & Steel Works, Bellingham, Washington. The Buda Company has informed us that its model 6-DCMR-1879 Diesels are to be installed in these vessels.



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NEW IMPROVED SUPER-LUBRICANT

FOR TOUGHEST LUBRICATION JOBS IN ALL INTERNAL COMBUSTION ENGINES

BASICALLY DIFFERENT... SPECIALLY REINFORCED!

- Resists Formation of Sludge, Lacquer, Carbon
- Removes Hard Carbon
- Stronger Protective Film
- Non-Corrosive—Safe
- Keeps Piston Rings Free
- Adds Power, Saves Fuel, Saves Wear and Shut-down Time

Accepted by Leading Engine Manufacturers as a Superior Lubricant for Heavy Duty Engines.

LION Naturalube D.H.D. OIL

Naturalube D.H.D. is made from a rare and basically different crude oil. This unusual crude gives D. H. D. a much stronger protective film than ordinary oils . . . greater ability to penetrate to all moving parts . . . greater adhesiveness . . . and the natural ability to remove hard carbon deposits from valves, rings and pistons. In addition, Naturalube D. H. D. is reinforced to prevent the deteriorating effects of heat and oxidation, and to resist the formation of harmful sludge and lacquer. It is also non-corrosive — safe!

When you use D. H. D., engines are cleaner . . . rings, valves and pistons operate freely for longer periods . . . filters, screens and oil lines do not clog and prevent proper lubrication of all parts. Because Naturalube D. H. D. removes carbon, there is no hard-carbon scuffing. The general performance of your engine is improved, operating and maintenance costs are lower, and shut-down time is held to a minimum. D. H. D. saves wear, adds power, saves fuel. Try it.

For normal service where D. H. D. is not required, use Naturalube Motor Oil (not so heavily reinforced).

POSITIVE MONEY-BACK GUARANTEE

Your money returned if you don't believe Naturalube to be the best oil you ever used.

LION PETROLEUM PRODUCTS

LION OIL COMPANY EL DORADO, ARKANSAS

John Earle Joins Nordberg

THE Nordberg Mfg. Company announces the appointment of John G. Earle as special representative of its Heavy Machinery Division. His work will largely be devoted to Diesel engines with which he has had wide experience during his many years of association with the Diesel field. Prior to his new position he was head of the Diesel engine section of the U. S. Maritime Commission and previous to that was with the Diesel Division of Baldwin Locomotive Works. His headquarters will be at the company's New York office, 60 East 42nd Street .

Sinclair Promotes Paul W. Zumbrook

APPOINTMENT of Paul W. Zumbrook as Manager of Domestic Lubricating Oil Sales of Sinclair Refining Company was announced recently by J. E. Dyer, Vice President. In his new assignment, Mr. Zumbrook will coordinate the service and distribution activity of the Sinclair automotive and industrial lubrication staffs, working closely with equipment manufacturers for the development of lubricating oils. Mr. Zumbrook became Lubricating Sales Manager for the Central District with headquarters in Chicago in 1936. He leaves this position to accept his new assignment. The appointment is effective immediately.

Marine BUCKEYE Stationary

DIESEL ENGINES

are PROTECTED 24 Hours a Day by this ALERT (SILENT) WATCHMAN

Your investment in a Buckeye Diesel is protected every operating minute by the patented "Silent Watchman," an important feature exclusive with Buckeye.

If either oil or water supply drops below the predetermined pressure necessary to serve the engine, the Silent Watchman cuts off the fuel supply *at the nozzles*, immediately stopping the engine—preventing possible costly repairs.

The Silent Watchman goes into action **INSTANTLY** if—

1. Lubricating oil pressure is too low.
2. Quantity of lubricating oil in the system is insufficient.
3. Lubricating oil is too thin.
4. Water in cooling system is insufficient.
5. Water circulation stops.
6. Bearings are too loose.

Stationary and Marine Propulsion (Direct Reversing) Engines 150-*900 H.P.

There are eleven other outstanding Buckeye features that mean much to users of Diesel power.

Write today for bulletins.

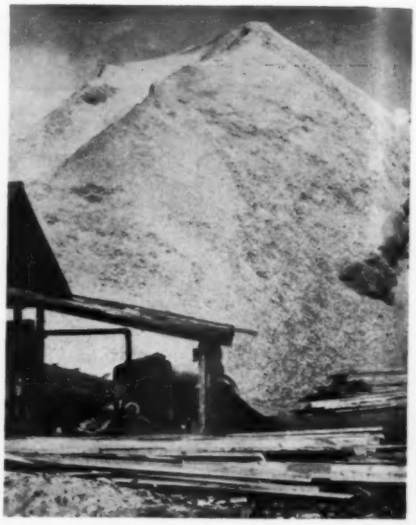
Stationary and Marine Auxiliary Generator Sets 100-*600 KW

*Supercharged ratings to 1440 H.P. and 1000 KW.

THE BUCKEYE MACHINE CO. — LIMA, OHIO

• ENGINE BUILDERS SINCE 1908 •

"Fuel to Burn" for Steam Power, But a Diesel Costs Less to Run



The mountain of sawdust shown in the picture represents four years of operation of the T. J. Hughey planing mill at Forsythe, Georgia. It also represents a source of absolutely free fuel which was used for a steam boiler and steam engine which was used to power this plant until January 1st, 1943.

"In spite of this free fuel for steam engine use," says Mr. Hughey, "we found it much more economical to pull the steam engine and boiler out and install a General Motors Series 71 4-cylinder Diesel engine. The steam boiler took the constant attention of a man to fire and keep up the steam pressure. The Diesel engine requires very little attention from morning to night, so by the saving of this man's time, the Diesel engine soon paid for itself. I have been in the lumber business 46 years and find the Diesel engine to be the most dependable and economical power I have ever used."

Buda Engine Catalog

THE Buda Company has recently published a 12-page catalog featuring its new line of "One-Sixty-One" Series Diesel engines for Automotive, Industrial, and Marine service. Illustrations show 1, 2, 3, 4, 6, and 8-cylinder models, ranging from 15 to 300 horsepower. The heavy-duty six and eight-cylinder Diesels are available in both standard and supercharged models.

Material in the catalog includes pressure lubrication data, a discussion of Buda slow pressure combustion system, engine data table and other descriptive information relative to the application of the new Buda Diesels to power needs throughout industry.

Fairbanks, Morse & Co. Announce Changes in Railroad Division Personnel

FAIRBANKS, Morse & Co., Chicago, have consolidated their Diesel Locomotive and Railroad Divisions, according to word recently received from R. H. Morse, Jr., Vice President and General Sales Manager.

John W. Barriger, who has been Manager of the Diesel Locomotive Division, has been named Manager of the recently combined Railroad Division of the company and John S. King, who has been Acting Manager of the Railroad Division, has been appointed Assistant Manager of the new division.

V. H. Peterson

V. H. Peterson, formerly assistant to the President and Manager of the New York office of the Baldwin Locomotive Works, has been appointed Manager of Railroad Sales, Eastern Division, of the company with offices at 80 Broad Street, New York City.

Elliott Issues New Bulletin

AN interesting and attractive bulletin of 18 pages, printed in two colors was recently published by Elliott Company, briefly describing its products for power plants and industrial processes. Included in the Elliott line are a variety of boiler room and turbine room accessories and machinery, from strainers to complete turbo-generator sets. Also featured are turbo-chargers for Diesels and generators for Diesel drive. Request this informative bulletin, No. Q-12, direct from Elliott Company, Jeannette, Pennsylvania.

FOR COMPLETELY AUTOMATIC AND DEPENDABLE VOLTAGE REGULATION

Burlington Synchrostat
(REG U.S. PAT. OFF.)
VOLTAGE REGULATOR

The Burlington Synchrostat, Type SR, Model SF, has proven to be the answer to the problem of voltage regulation in numerous installations. Its inherent sensitivity in following voltage changes makes it respond quickly and accurately in restoring generator voltage to normal.

SPECIAL FEATURES ARE:

Simplified control . . . rugged construction . . . simple installation . . . minimum maintenance . . . unaffected by reasonable vibration . . . automatic polarity reversal . . . rapid, positive response to maintain normal voltage.

Write today for full particulars **and** application data.

BURLINGTON INSTRUMENT CO.
1501 FOURTH STREET BURLINGTON, IOWA

PANEL INSTRUMENTS • VOLTAGE REGULATORS • AUTOMATIC SYNCHRONIZERS • FREQUENCY REGULATORS

B

Diesel Engineers To Meet in Milwaukee

THE 18th National Oil and Gas Power Conference, sponsored by the Oil and Gas Power Division, ASME, will be held at the Hotel Schroeder, Milwaukee, Wis., June 12-15. Postponed from last year because of the government ban, the meeting has had an additional year to gain momentum and the result is a program packed with sessions of strong current interest.

There will be a total of seven technical sessions, arranged to leave afternoons free for the many worthwhile inspection trips that can be made in an industrial center such as Milwaukee. The technical program gets under way Wednesday afternoon, following registration in the morning. There follow a session on Thursday morning, two each on Friday and Saturday mornings, and one Friday evening. The banquet will be held on Wednesday evening and Thursday evening will be featured by a social get-together.

Of particularly timely interest will be the sessions on new railroad Diesels and on the recently developed gas Diesel. These will take the form of symposiums; the short papers will be presented by engineers who have made definite contributions to the recent activity in these fields. Considerable interest also attaches to the two sessions on gas turbines. One will include a report of extensive experience with open-cycle units, a paper on gas-turbine materials and a survey of the patent situation in this field. The second gas-turbine session will include reports on European developments by recently returned members of the Gas-Turbine Coordinating Committee, and a paper on governing of closed-cycle machines.

Another session will include papers on Diesels for peak-load and standby service and on measurement of flame temperatures. A marine session will deal with methods of connecting Diesels to ships propellers, including papers on the Bowes drive and on chain drives.

The first day of the Conference is to be held in conjunction with the Diesel Engine Manu

Simplicity Itself-

The HOUDAILLE Viscous Torsional Vibration Damper

One of the most interesting features of the new Houdaille* Viscous Torsional Vibration Damper is its simplicity. There are only two essential parts—the two-piece welded housing and the damper mass or flywheel.

Yet extensive tests, both by Houdaille* and engine manufacturers, have clearly demonstrated that on large engines or small, it damps BOTH major and minor critical orders of vibration more efficiently than any other device.

The damper employs the new Silicone fluid, hermetically sealed in the housing, so that its operation is unaffected by temperature variations. It requires no servicing and will operate without attention for the life of any engine.

Houdaille* engineers will be glad to design a Viscous Torsional Vibration Damper to meet the specific requirements of any engine —either gasoline or diesel.

An exclusive development of Houde Engineering Division —patents pending.

HOUDE ENGINEERING DIVISION OF
HOUDAILLE-HERSHEY CORPORATION
MAKERS OF HYDRAULIC CONTROLS
BUFFALO 11, NEW YORK

***Pronounced Hoo-dye**

acturers Association. At the general luncheon, he speaker will discuss some highlights in the istory of the Diesel locomotive. The afternoon session will feature a ten-year report on echnical progress in the oil and gas power ield, and a paper on a new method of supercharging.

The banquet program, sponsored by DEMA, will present a brief view of the prospects in the arious fields of engine application. Members f DEMA's executive board will speak briefly n the outlook for utilities, ships and boats, ailroads, the oil industry and the automotive ield. The president of DEMA will introduce he speakers and summarize their conclusions.

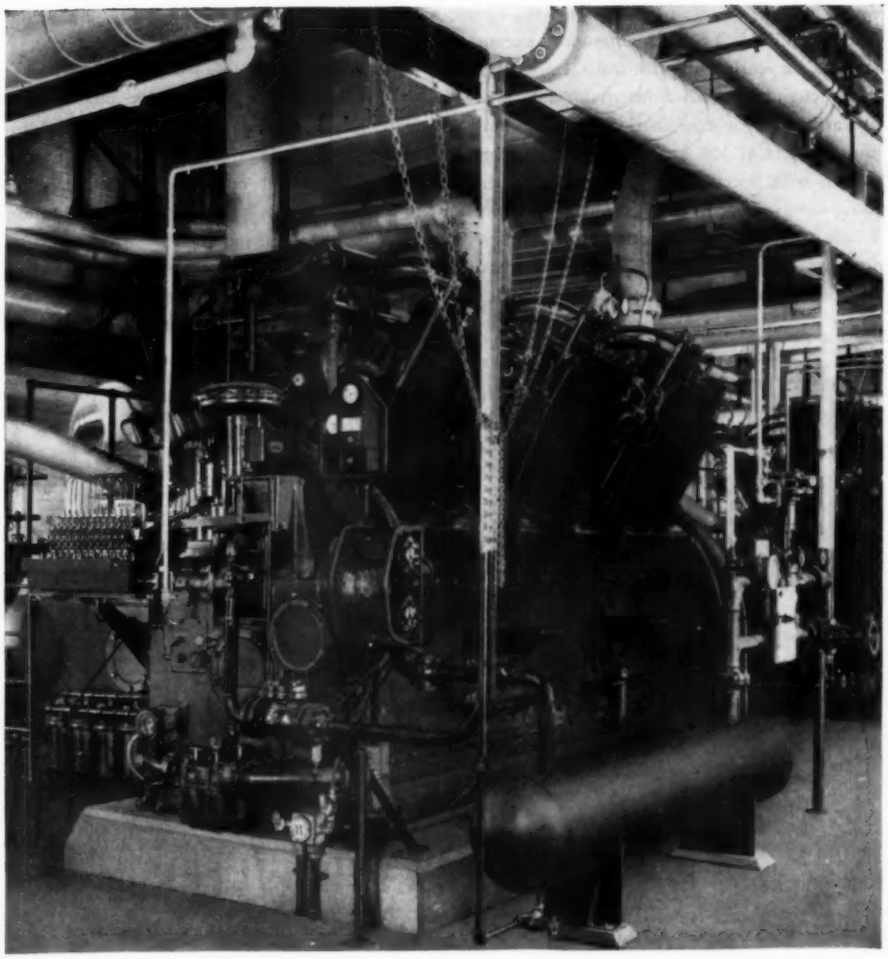
Inspection trips tentatively planned include the et-propulsion laboratories and gas-turbine hops of Allis-Chalmers Mfg. Co., the Diesel hops of Nordberg Mfg. Co., the Falk Corp. orks, where speed-reducing and power-transission equipment is built, and a number of ther plants in and around Milwaukee.

In addition to hearing of the recent technical rogress in the oil and gas power field, engineers attending this Conference will have an pportunity to see the latest products of engine nd accessory manufacturers at an exhibit of odern equipment. On the basis of present ndications, close to 50 manufacturers will be epresented making this the largest exhibit thus ar held in connection with these meetings. Consideration is also being given to a scientific xhibit somewhat similar to that held at the 942 Conference, in Peoria, Illinois.

A committee of the Milwaukee Section of ASME, under the chairmanship of Robert Cramer, is organizing plans for the sessions, rips, and social events; the technical program s being developed by R. T. Sawyer, chairman f the meetings and papers committee of the Oil and Gas Power Division. Bruno V. E. Nordberg will be honorary chairman of the Conference. T. A. Wetzel heads the Milwaukee Section and E. J. Kates is chairman of the Oil and Gas Power Division.

Crane Co. Appoints Marine Sales Manager

CORNELIUS AUSEMA has been appointed ssistant manager of Marine Sales for Crane Co. Mr. Ausema started with Crane Co. in 926 and had worked in various departments ntil joining Marine Sales in 1936. He has one an outstanding job in this department n handling the large volume of Navy and Maritime work during the war.



Alnor **Exhaust Pyrometers guard these Cooper-Bessemer compressor units . . .**

THESE seven Cooper-Bessemer gas engine-compressor units, totaling 3200 hp., are in use in a midwestern refinery, each equipped with an Alnor Exhaust Pyrometer. The easy routine watch of exhaust temperatures with Alnor Exhaust Pyrometers provides a reliable guide to efficient operation and proper adjustment and maintenance that is especially valuable where continuous operation over long periods is the rule. There is an Alnor Pyrometer to suit the needs of any Diesel or gas engine installation, large or small, afloat or ashore. Write for descriptive bulletins.

TYPE BZ PYROMETER

ILLINOIS TESTING LABORATORIES, INC.
420 NORTH LA SALLE STREET • CHICAGO 10, ILLINOIS

OPA Ceilings

EFFECTIVE April 8, OPA announced exemption and suspension of price control on Diesel or gas engines or other internal combustion generating sets or combinations of such type generator sets of 150 kw. and over, including prime movers. Specifically on Diesel engines, the ruling covers those engines normally operated at 1200 rpm. or less and with piston displacements in excess of 3,000 cubic inches and having a continuous duty rating in excess of 400 hp.

Oakite Manual Lists 71 Uses for Products

A 20-PAGE, illustrated manual issued by Oakite Products, Inc., gives specific method and material recommendations for handling cleaning, degreasing, descaling, derusting, paint stripping and related operations encountered in power plants, and includes concise data on 71 different maintenance cleaning and related jobs. Among these are, cleaning and descaling heat exchange equipment, Diesel cooling systems and crankcases, removing and preventing formation of lime scale and slime in evaporative coolers and condensers, and up-to-date steam detergent cleaning methods and equipment.

Power plant engineers should be particularly interested in this Digest "71," which is obtainable on request from Oakite Products, Inc., 22D Thames Street, New York 6, N. Y.

IF YOU USE FILTERS

(1) To Improve Engine Performance

(2) To Cut Lube Oil Costs

A Few Cents More For a BETTER FILTER is a Logical Expenditure

A good oil filter is the one accessory that can do more to reduce engine maintenance costs, provide thousands of more miles of satisfactory performance and drastically reduce lube oil bills, than anything else.

A clean engine means less chance of gum and sludge accumulations—means less mechanical overhauling—means improved lubrication for longer engine life and fewer oil changes.

Selected on performance and competitive tests by America's foremost builders and designers of Diesel and gasoline engines and motorized equipment—MICHIANA Filters do the job that a filter is designed to do. They are made with this idea in mind and because of long experience and large production facilities, they cost but little more. For the job they do they really cost you much less . . . MICHIANA PRODUCTS CORPORATION, Michigan City, Indiana.

Made for engines up to several thousand horsepower capacity—with uniformly high quality engineered replacement cartridge Re-Fills.

MICHIANA OIL FILTERS

Palmer A. Dolph Named Vice-President of Continental Motors Corp.

Palmer A. Dolph

PALMER A. DOLPH has been elected vice-president of Continental Motors Corp. to fill the position of assistant sales manager of the automotive and transportation engine division, C. J. Reese, president, recently announced. Mr. Dolph has been connected with Continental Motors Corp. for thirty years in the production, service and sales divisions. In recent years he has been Middle West district sales manager.

Bardco Elects George Castera, President

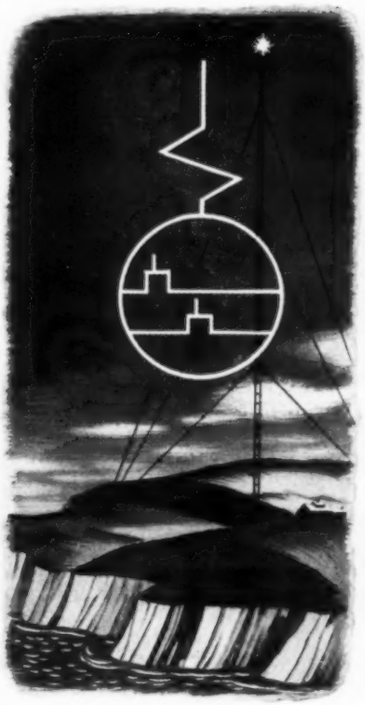
ELECTION of George Castera to President of Bardco Manufacturing & Sales Co., at a recent Board of Directors meeting, is announced by Sidney Wyse, Vice-President and General Manager of the firm. Castera fills the position held by the late Fred Jervis. He has been associated with this West Coast manufacturer of generating plants, electric motors and generators for the past three years as Treasurer. Prior to joining Bardco, Castera had been prominently identified wtih Southern California aircraft and industrial firms. John E. Walters is Vice President and Sales Manager of the firm.

Currently Bardco is building a wide range of gasoline and Diesel engine driven electric lighting plants for industrial and marine service. Sixty-five plants of 100 kw. capacity are under construction for UNRA, including the complete switchboards and other auxiliary equipment. Heavy duty Diesel engines drive the Bardco a-c generators on the UNRA plants.

SPERRY GYRO-COMPASS

SPERRY LORAN

SPERRY RADAR



Three guiding stars of modern navigation...

★The Sperry GYRO-COMPASS with its non-magnetic, true north indications is the modern mariner's guide for trustworthy, accurate *direction*.

★Sperry RADAR is his *safeguard* and *protection* when visibility is poor—permitting his ship to operate on regular schedule through fog, smoke, rain, darkness.

★Sperry LORAN gives him *position*—anytime, in all weather, anywhere within range of radio signals from land-based transmitting stations.

This group of three Sperry instruments—with their complementary functions—equips a ship with the most modern means of making navigation safer, simpler and more efficient.

Every one of these Sperry products offers superior features: In the Sperry GYRO-COMPASS, ruggedness and reliability... In Sperry RADAR, a Gyro-Compass-controlled image and a simple operating technique... In Sperry LORAN, advanced design and exceptional ease of operation with the exclusive Time Difference Meter.

All are backed by the Sperry world-wide service organization.

Sperry Gyroscope Company, Inc.

EXECUTIVE OFFICES: GREAT NECK, NEW YORK • DIVISION OF THE SPERRY CORPORATION
LOS ANGELES • SAN FRANCISCO • SEATTLE • NEW ORLEANS • CLEVELAND • HONOLULU
GYROSCOPICS • ELECTRONICS • RADAR • AUTOMATIC COMPUTATION • SERVO-MECHANISMS

Orville Adams Joins Prentice-Hall

ORVILLE L. ADAMS has joined the Industrial Division of Prentice-Hall, Inc., following his recent release from the United States Navy and is engaged in the development of manuscripts and the promotion of sales of industrial, trade and apprentice training books in the Eastern states.

After receiving a naval lieutenant's commission in December, 1942, Mr. Adams served as ship repair officer at a naval base in the Aleutians. Returning to Washington, D. C., in 1945, he was active in the development of the Navy's post-war apprentice training program in the Navy Office of Industrial Relations. He emerged from the Navy with the rank of Lieutenant Commander.

Mr. Adams, who served with the AEF during World War I, was formerly in civilian engineering and education work. An associate member of the Society of Automotive Engineers, the American Society of Mechanical Engineers, the U. S. Naval Institute, and the Army Ordnance Association, he is the author of "Modern Diesel Engines" and "Elements of Diesel Engineering." Prentice-Hall will publish Mr. Adams' latest book, "Diesel Engine Operation and Maintenance," on June 17.

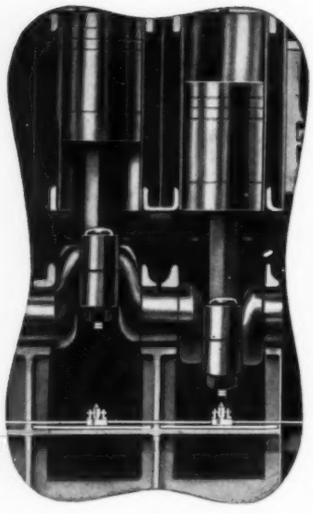
Sterling Engine Company Establishes Factory Branch On the West Coast

THE Sterling Engine Company has opened a direct factory branch in San Francisco, it was recently announced by Addison F. Vars, President of the company. The new factory branch, established to handle expanding business in the Pacific Coast States, will serve the territory west of the Rocky Mountains, and will give the Sterling Company a coast-to-coast sales and service organization.

Hans Bohuslav *Al Hahn*

Hans Bohuslav, Vice-President and director of Sterling's engineering development and new research, will be in direct charge of the new factory branch. He will be assisted by Al Hahn, Navy Commander during the war, who has now joined the Sterling organization. Both Bohuslav and Hahn are well-known engine specialists having been associated for many years in engine development and service work on the West Coast. The present line of Sterling's Viking Diesel engines was developed under the technical direction and supervision of Mr. Bohuslav. As Navy Commander during the war, Mr. Hahn saw service from Iceland to Guam and operated large Navy engine and equipment repair and overhaul shops both in the states and overseas. Through the Sterling factory branch, Bohuslav and Hahn will bring to West Coast users of industrial and marine engines a wealth of practical experience in the installation and servicing of modern power plants. Headquarters for the new Sterling Factory Branch are located in the Russ Building in San Francisco.

Now you can "inspect" Diesel Bearings without stopping the engine!



Install the
BEARING WATCHDOG SYSTEM To:

- Protect the crankshaft
- Permit maximum bearing wear
- Make frequent bearing inspection unnecessary
- Locate faulty bearing instantly
- Protect the engine

"Inspecting" Diesel bearings without stopping the engine is accomplished by the Bearing Watchdog System, for the "Watchdog" trip levers installed (one below each connecting rod throw) literally "measure" the wear beyond predetermined standard or shell-out of connecting rod and main bearings. The wear or shell-out can be detected in plenty of time to prevent damage to the crankshaft.

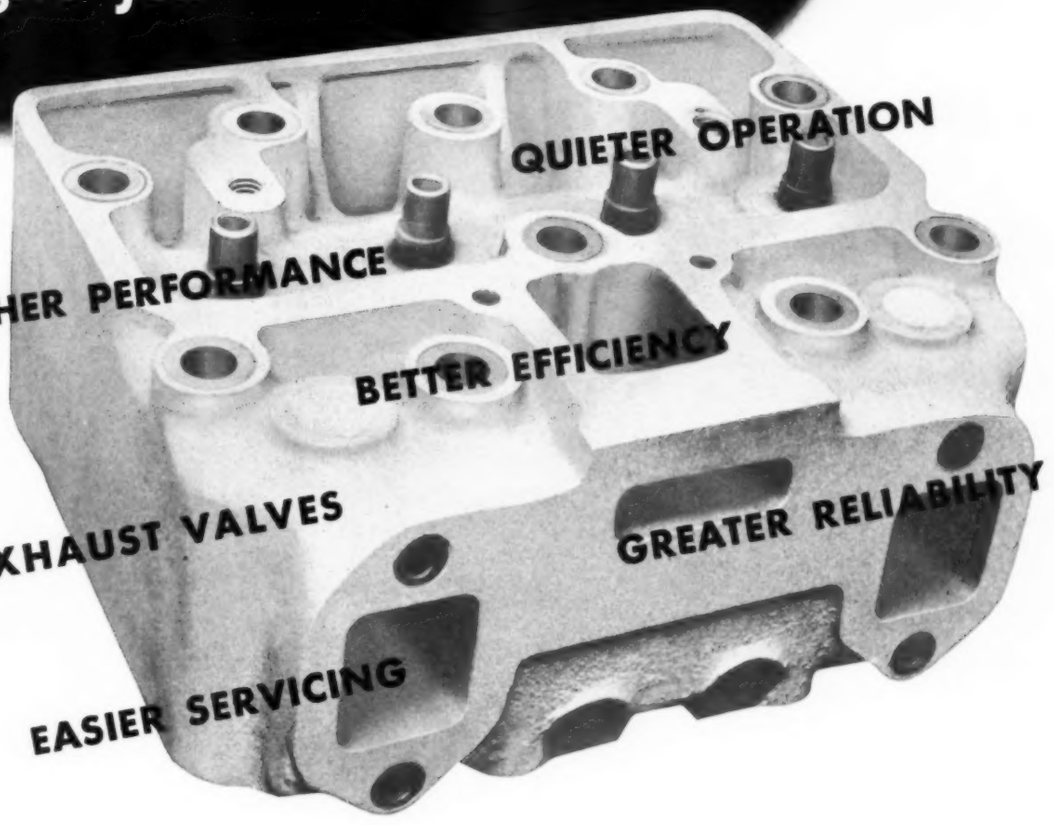
Because the Bearing Watchdog System shuts down the engine almost instantly when the wear reaches a certain point or shell-out occurs, further damage to the engine is prevented.

The system has been thoroughly tested and approved by leading railroads and prominent steamship operators. One leading railroad recently reported savings of more than $75,000 in maintenance and repairs has been credited to the Bearing Watchdog Systems installed in its Diesel locomotives.

Write today for complete details!

BEARING WATCHDOG SYSTEM
PAXTON DIESEL ENGINEERING COMPANY
OMAHA 7, NEBRASKA
Diesel Specialties • Parts • Repair Service
A subsidiary of PAXTON-MITCHELL COMPANY
Engineers - Founders - Craftsmen

Cylinder Heads of Alcoa Aluminum give you . . .



A diesel is necessarily a high temperature, high pressure engine. Its cylinder heads must, therefore, be able to dispose of that heat properly, while also withstanding the tremendous pressures encountered. Alcoa Aluminum gives you that kind of cylinder heads.

Aluminum is a superior conductor of heat. In cylinder heads of Alcoa Aluminum, heat is conducted away rapidly from its source, helping eliminate hot spots and other heat problems. As a result, your diesel performs more smoothly and quietly. It has higher efficiency, lower depreciation, and greater reliability.

Of considerable importance in mobile equipment, the lighter weight of cylinder heads of Alcoa Aluminum reduces the over-all weight of an engine and makes servicing easier. One man can often handle an aluminum head, whereas two men and a hoist would be needed with a heavy head.

Your builder can give you these advantages by including cylinder heads of Alcoa Aluminum in your engines.

ALUMINUM COMPANY OF AMERICA, 2141 Gulf Building, Pittsburgh 19, Pennsylvania. Sales offices in leading cities.

ALCOA FIRST IN ALUMINUM

D.E.M.A. and Penn State Offer Short Course For Teachers Of Diesel Engineering

A SHORT course for college teachers of Diesel engineering, the first of its kind, will be offered by the School of Engineering of the Pennsylvania State College in cooperation with the Diesel Engine Manufacturers Association.

The course, which will enroll 40 teachers from all sections of the country, will begin June 24 and end July 6. Both laboratory exercises and lectures will be taught by leading engineers from the Diesel Engine Manufacturing and Research Laboratories and faculty members of the college.

According to H. P. Hammond, dean of the School of Engineering at Penn State, the program aims to bring about a better understanding of the function of engineering schools in preparing students to enter the Diesel industry and to aid in improving the standards of class instruction and laboratory work.

The mechanical engineering laboratories at Penn State are equipped with 22 Diesel engines, including 19 in regular operable condition and setting, and 3 reserved for tear-down examination and re-assembly. These engines and their settings include a considerable variety of types and makes. In the Diesel laboratory of the Engineering Experiment Station there are 5 special single-cylinder and multi-cylinder engines especially adapted to research work. A special laboratory is devoted exclusively to fuel injection experimental work.

Graduate instruction in Diesel engineering for groups of Naval officers was begun in 1929 at Penn State and has been conducted either for civilian or military personnel continuously since that year. During the war, over 800 naval officers received instruction at the college in this field. Diesel engine research has been featured in the Engineering Experiment Station at Penn State since 1923.

Among the engineers who will be speakers on the program are Glenn C. Boyer, associate engineer, Burns and McDonnell Engineering Co.; R. L. Boyer, chief engineer, The Cooper Bessemer Corp.; L. J. Bradford, professor of mechanical engineering, Pennsylvania State College; K. J. DeJuhasz, professor of engineering research, Pennsylvania State College; Harvey T. Hill, executive director, Diesel Engine Manufacturers Association; W. M. Holaday, Director, Research Department, Socony-Vacuum Laboratories; R. A. Hundley, chief engineer, Enterprise Engine and Foundry Co.; W. F. Joachim, Superintendent, Internal Combustion Engine Laboratory, U. S. Naval Engineering Experiment Station; Gordon Lefebvre, president, The Cooper-Bessemer Corp.; J. K. Salisbury, Turbine Engineer, General Electric Corp.; P. H. Schweitzer, professor of engineering research, Pennsylvania State College; F. G. Shoemaker, chief engineer, Detroit Diesel Engineering Division, General Motors Corp.; N. R. Sparks, professor of mechanical engineering, Pennsylvania State College; C. O. Tongberg, assistant director, Esso Laboratories, Standard Oil Development Co.; and Wilbur W. Young, Editor, DIESEL PROGRESS.

Correction Please

IN the article entitled, "Diesels Make Big Business In Little Fishes," which appeared in the April issue of DIESEL PROGRESS, the vessels *Santa Rita* and *Star of Monterey* were wrongly listed as being powered with Washington Diesels. We are informed that these two sardine boats have Union Diesels for propulsion. Our apologies to all concerned.

get rid of
ENGINE
SLUDGE!
Loosite
TO CLEAN OUT THE ENGINE
ONE U.S. QUART
SILOO
DIESEL
MARINE ENGINES
TO KEEP IT CLEAN
Sludge and gum in engines mean trouble. Cars lose more and more power as these petroleum residues build up in the crankcase. LOOSITE, a safe and effective solvent, thoroughly cleans the engine quickly and economically—thereby restoring full engine power.
To keep the engine factory-clean, simply add a can of SILOO with each change of crankcase oil—that's all! SILOO, the seven-solvent liquid compound, becomes a desludging part of the oil itself—cannot be removed by any standard oil filter. SILOO prevents rust, neutralizes acid formations and retards corrosion.
A LOOSITE-SILOO treatment will show immediate results on any type Diesel or gas engine regardless of type or brand of oil used. Fifteen years of service endorses its use.
SOLVENTS FOR ALL TYPES OF PETROLEUM RESIDUES
Petroleum Solvents
CORPORATION
General Offices: 331 Madison Avenue, New York 17, N. Y.
Plant and Laboratories: Port Reading, New Jersey
Petroleum Solvents Corp. of Canada, Ltd.,
Dominion Square Bldg., Montreal
If you heat with oil — write for information on
SILOO FUEL OIL TANK SOLVENT

American Locomotive Appoints Roland A. Sherwood

THE appointment of Roland A. Sherwood as assistant to the President of American Locomotive Company has been announced by Robert B. McColl, President.

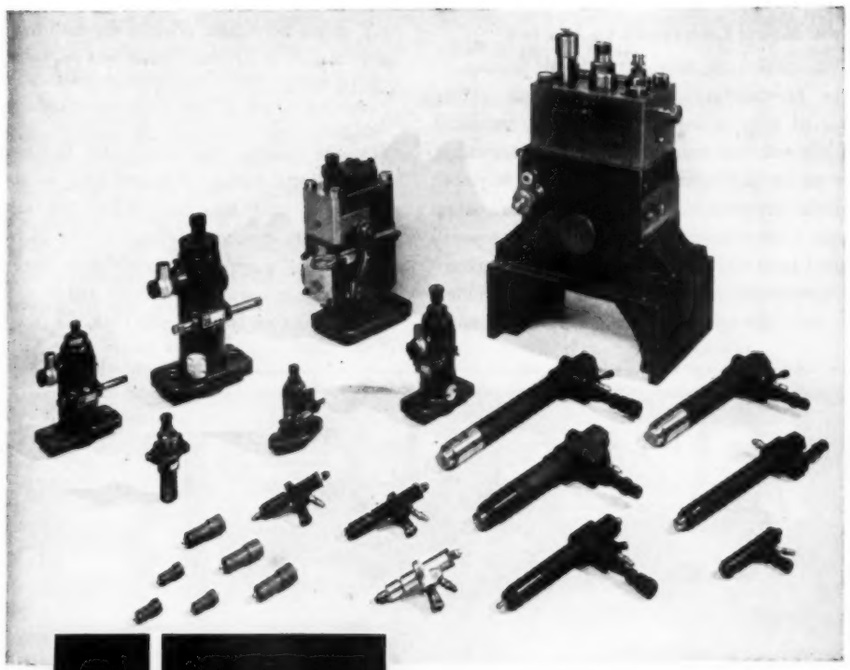
Roland A. Sherwood

Mr. Sherwood joined the locomotive company in 1939 and became assistant to the Executive Vice President last September. He will make his headquarters at the company's general offices at 30 Church Street, New York. Mr. Sherwood is a graduate of Columbia University.

Executive Changes At Roots-Connersville

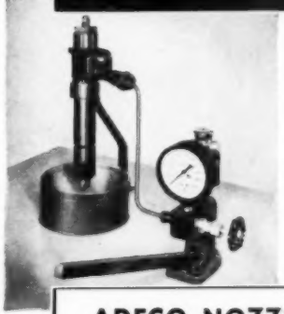
ELECTION of J. S. Tatman as Chairman of the Board and John Avery as President and General Manager of Roots-Connersville Blower Corporation, Connersville, Ind., one of the Dresser Industries, was announced following the recent meeting of the directors of this company. Mr. Tatman has been with Roots-Connersville since his graduation from Purdue University in 1902. He is a Vice President of The Compressed Air & Gas Institute.

Mr. Avery, well known for his activities in centrifugal compressor engineering for the past 22 years, was graduated from the U. S. Naval Academy in 1923. He then joined the engineering staff of General Electric Co. and in 1926 became a project engineer for American Brown Boveri Co. Before becoming President of Roots-Connersville, Avery was manager of the Blower and Compressor Dept. of Allis-Chalmers Mfg. Co., Milwaukee, Wis.



adeco...

YOUR SOURCE FOR DEPENDABLE FUEL INJECTION EQUIPMENT



Whether you need standard fuel injection equipment or special units built to your specifications, Adeco offers the logical source of supply.

Today's line of Adeco equipment, the outgrowth of long experience in serving the Diesel industry, includes: Standard fuel injection pumps in plunger diameters from 7 mm. to 31 mm.; a complete line of standard nozzles and nozzle holders, including the water-cooled type; and the Adeco nozzle tester.

All Adeco products are built to highest standards, with years of trouble-free operation behind them to testify to their reliability.

ADECO NOZZLE TESTER

For Low-Cost Maintenance

America's most widely used nozzle tester enables any mechanic to make quick, accurate tests on injector opening pressure, spray pattern, etc., and detect stuck needle valves and leakage around valve seats. Compact, portable, sturdy, precision-built. Pressures up to 10,000 p.s.i. Tests both large and small injectors on bench or engine. Prevents costly delays and possible damage to engine. Standard or Navy-approved gauge. Ideal for testing hydraulic equipment. Write for bulletin.

ADEC

AIRCRAFT & DIESEL EQUIPMENT CORP.

4401 NO. RAVENSWOOD AVE. • CHICAGO 40, ILLINOIS

New Bern Converts to Diesel

THE citizens of New Bern, North Carolina, were faced with a difficult problem. The material increase in the city's population during the war and the resulting demand for electric power had been too great for the 30-year-old municipal steam plant to handle, and as a result a large block of power had to be purchased from a private utility. Furthermore, the capacity of the boilers was insufficient to handle the full load rating of the generators, a fact that would necessitate a major expenditure for new boilers if a steam plant was to be continued.

The city retained the Burns and McConnell Engineering Company of Kansas City, Missouri, to make an analysis of the problem. The results of the study showed a definite saving in favor of a Diesel generating plant. Bids were requested from various interested Diesel manufacturers and on December 7, 1945, the contract was awarded to The National Supply Company whose bid of $295,950 for the 5 complete Diesel-electric generators was the lowest of the five competitors and contained the promise of earliest installation. The installation was to include generators supplied by the Electric Machinery Manufacturing Company of Minneapolis as specified by the New Bern City Council.

It should not be long before the Dieselized New Bern power plant will be in operation supplying all its customers with inexpensive electricity.

SPINNING POWER on both sides of zero—means starting that's quick and starting that's sure. Summer or Winter, your Diesel engines respond to Spinning Power. Globe-Union Batteries and Diesel engines are a sure-fire team. Globe-Union Batteries have *Spinning Power.*

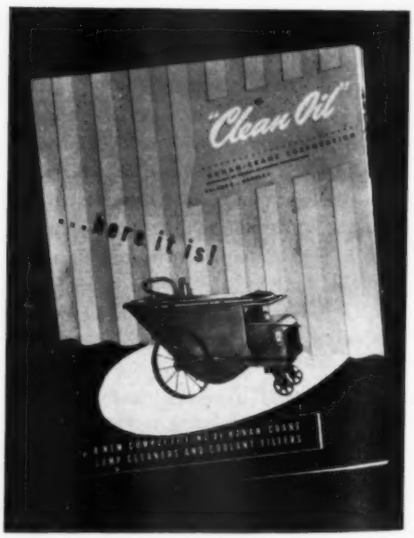
GLOBE-UNION INC., Milwaukee 1, Wis.

SPINNING POWER

GLOBE-UNION

Honan-Crane Announces New Products

ANNOUNCEMENT of four new products, two sump cleaners and two coolant filters, is contained in the latest issue of "Clean Oil," the house organ published by Honan-Crane Corporation, a subsidiary of Houdaille-Hershey Corporation. Two pages and the front cover are devoted to these new products, which are designed to improve machine tool operation.

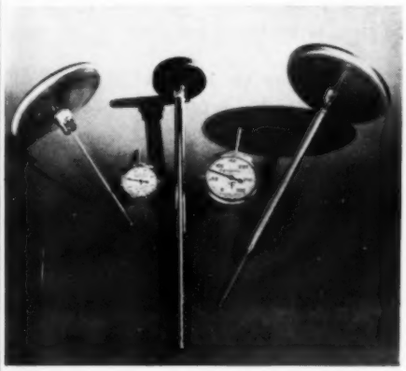


Under the headings, "Oil Purification Has Come a Long Way" and "Research is Key to Future Progress," pages 6 and 7 discuss development of oil purification in recent years, the present-day application of this operating principle, and the place laboratory research holds in solving the increasingly complicated problems related to the purification and use of purified oils in modern industrial processes.

Volume 2, No. 1 of "Clean Oil" will find a place in the permanent files of those who receive it. Copies will be mailed on written request to Honan-Crane Corporation, 202 Indianapolis Avenue, Lebanon, Indiana.

Bimetal-Element Dial Thermometer

A NEW bimetallic dial thermometer features a permanently-calibrated, accurate and responsive precision bimetallic helical coil measuring element having a case of stainless steel, stainless steel connection nut and stem; large, easy-reading numerals and temperature graduations on metal dial with an unbreakable glass crystal. Expansion of the bimetallic coil rotates attached small shaft and indicating pointer as one unit over entire scale range as the only moving part.



Separable sockets are high-pressure type designed for universal service conditions, having 1" or ¾" standard connections. For full particulars write Equipoise Controls, 342 Madison Ave., New York 17, N. Y.

Melvin C. Shaw Appointed Manager of Allis-Chalmers

MELVIN C. SHAW has been named manager of the blower and compressor department at the Allis-Chalmers Mfg. Co., according to an announcement by W. C. Johnson, company vice-president. He succeeds John Avery, who has resigned to become president of a blower corporation in Indiana.

Shaw, with Allis-Chalmers since 1914 when he was graduated from the University of Washington, has been chief engineer of the department he will now head since 1935. After serving in the company's erection department until World War I, he entered the merchant marine, returning to Allis-Chalmers in 1919. He worked in the company's pumping engine department from then until 1931, when Allis-Chalmers acquired the American Brown Boveri interests and established a new blower and compressor department.

Over this period of more than 30 years, Shaw has been a principal contributor to Allis-Chalmers engineering which figured in the change-over from reciprocating plunger-type pumps handling water and oil to blowers and compressors handling air and gas. He played a major role in the design, construction and installation of such significant equipment as the huge triple-expansion pumps for the cities of Cleveland and Milwaukee over 25 years ago; big boiler feed pumps rated 3000 gpm at 1200 pounds pressure for the Chicago District, Electric Generating Company in 1929; and more recently the 6,000 centrifugal pumps needed for sending gases through pipes in the Oak Ridge plant.

Avery, manager since 1944, joined Allis-Chalmers in 1931 when the company assumed the Brown-Boveri interests.

Kerkling Moves Executive Offices to California

KERKLING & Company recently announced the transfer of its executive offices from Bloomington, Indiana to Burbank, California where its new factory is under construction. The Kerkling plant in Bloomington, Indiana will continue to operate and handle most shipments of the company's products until such time as the California plant gets under way.

FULLER POWER FOR PEACE

For 85 years — as the world's oldest refiner — the makers of famous Be Square products have assisted in the development of many significant changes and improvements in the refining and manufacture of petroleum lubricants.

While furnishing high standard lubricants to our Armed Forces, Be Square perfected many new processes and manufacturing techniques to give the production of peacetime America finer, more efficient Diesel lubricants.

BE SQUARE HEAVY DUTY DIESEL ENGINE OILS

FULL Diesel power means MAXIMUM KILOWATT HOURS AT MINIMUM MAINTENANCE COST. For your Diesels to maintain such operating records, specify BE SQUARE HEAVY DUTY DIESEL ENGINE OILS — manufactured with IMPROVED ADDITIVES to resist ring-sticking, sludge, corrosion, scuffing and hard-carbon deposits.

Be Square lubricants are tested under high temperature operating conditions which determine their OXIDATION STABILITY, CORROSION CHARACTERISTICS, and OVERALL LUBRICATING VALUES. Many satisfied customers testify to the extra margin of protection assured by BE SQUARE DIESEL LUBRICANTS.

"BE SQUARE TO YOUR ENGINE"

Consultation Service—
Our experienced engineering services are available to your plant management without cost or obligation.

BARECO OIL CO.
BOX 2009 TULSA, OKLA.
Barnsdall, Okla. — refineries — Wichita, Kansas

An Improved
VIBRO-ISOLATOR
for
ALL DIESELS

Vibration Control in both stationary and marine diesels poses the problems of vertical and lateral engine motion. And the new Korfund Type LK Vibro-Isolator answers both those problems.

A simplified unit, Type LK is a steel spring isolator with an adjusting bolt to permit leveling of the engine. At the same time, resilient chocks in the four corners act as stabilizers. And two horizontal bolts enable adjustment of the chocks for the correct amount of damping.

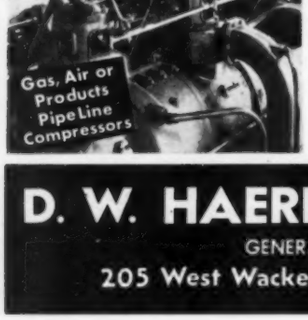
Write today for complete details on Korfund Type LK Vibro-Isolator.

KORFUND
VIBRATION CONTROL

THE KORFUND CO., INC.
48-28 32nd Place
Long Island City 1, N. Y.

JACKET COOLING WATER PROBLEMS
RESPOND TO

HAERING GLUCOSATES



Write for latest "H-O-H Lighthouse" containing articles on Diesel Engine Cooling Water Treatment and Scale and Corrosion Control in Engine Jacket Cooling Systems.

D. W. HAERING & CO., Inc.
GENERAL OFFICES:
205 West Wacker Drive, Chicago 6, Ill.

WE READ WATER

Alco Ends Strike—Tackles Production Backlog

A BACKLOG of slightly less than $100,000,000 in orders was reported at the recent annual meeting of shareholders of American Locomotive Company by Duncan W. Fraser, chairman of the board. This is the largest peacetime backlog in the company's history.

Reporting on recent engineering and manufacturing developments, Mr. Fraser announced that the company is developing at Schenectady, N. Y., "the most modern plant for mass production of Diesel engines and Diesel-electric locomotives to be found anywhere in the world."

"The company has been quick to reflect the demands of railroads for Diesel-electric locomotives," the chairman said, "and, without disturbing our steam locomotive productive capacity, we have invested substantially in research and development for expanded facilities in the Diesel field." Diesel engines, he added, will be built on the assembly line principle. Mr. Fraser said that production of locomotives and other products had returned to normal at four of the company's plants which were until recently out on strike.

Battery-Sized Hydraulic Unit Produced by Roper Corporation

A BATTERY-SIZED hydraulic power unit is being manufactured by the Roper Corporation of Rockford, Illinois. This 42 lb. unit can be utilized in any situation where a moderate amount of hydraulic power is required and is easily adaptable to Diesel, gas or electric drive. It is especially applicable to tractor installations.

Roper-Pac new hydraulic power unit.

"Roper-Pac" as the unit is called includes a rotary-gear pump, control valves, and an oil reservoir, and can supply hydraulic power at 600 psi. at a rate of 5 gpm. with a pump speed

of 500 rpm. Its power requirements range from 5 to 8 hp. according to load. Its system of controls insures safe operation. Further details may be obtained from George D. Roper Corporation of Rockford, Illinois, upon request.

Robert E. Dillon Elected to Sterling Engine Board

ADDISON F. VARS, President of the Sterling Engine Company, has announced that Robert E. Dillon was recently elected to the Board of Directors. With a broad experience in industrial and financial circles Mr. Dillon will be in a position to contribute much toward the continued success of Sterling Engine Company's postwar plans.

Robert E. Dillon

In addition to his directorship in the Sterling Engine Company, Mr. Dillon is also President and General Manager of the Lake Erie Engineering Corporation, director of the Marine Trust Company, Air Investors, Inc. of New York City, and several other financial and manufacturing companies. Officers and other Directors of the Sterling Engine Company are: Spencer H. Logan, Chairman of the Board; Charles A. Criqui, Vice Chairman of the Board and Director; Addison F. Vars, President, General Manager, Treasurer and Director; Hans Bohuslav, Vice President in Charge of Engineering and Director; Frank G. Raichle, Secretary and Director.

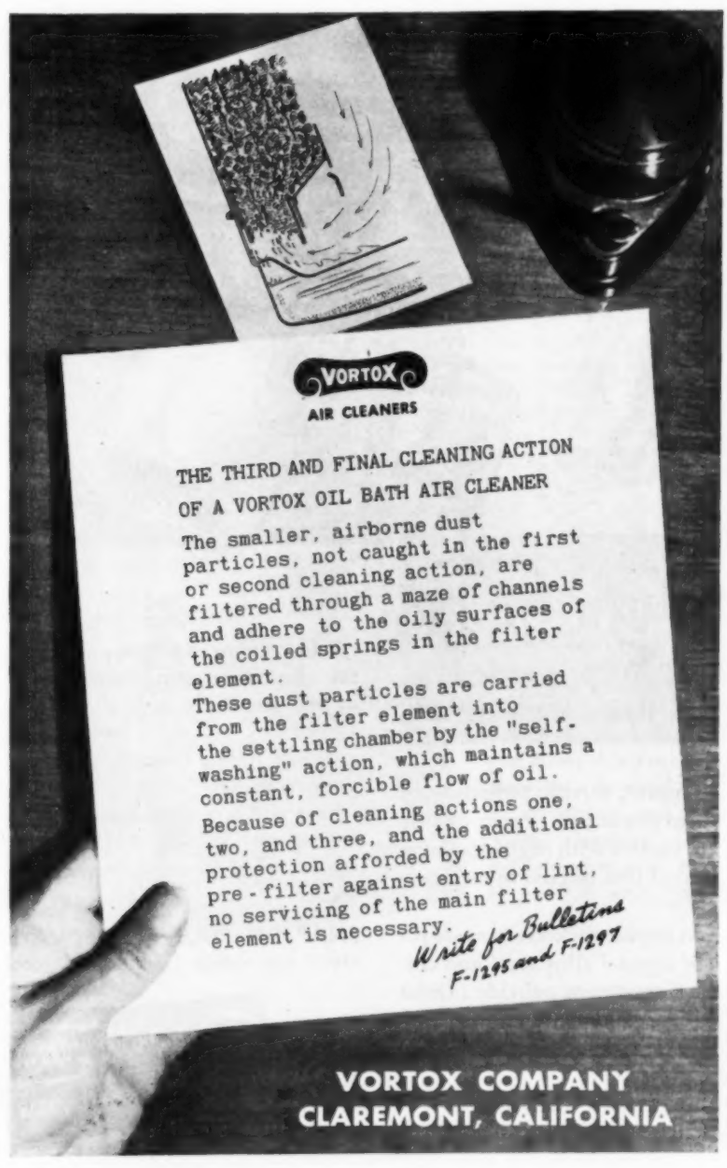
Oil Field Diesels— Subject of GM Brochure

GENERAL MOTORS has recently issued a new two-color brochure describing and illustrating a group of portable 6-cylinder, 2 cycle, "71" series Diesels which can be purchased singly or in banks of two or four units depending upon the power requirements. The single unit develops 130 bhp. under continuous duty and when equipped with larger, "M" type injectors, can develop 148 hp. and a maximum torque of 480 foot lbs. The four-engined "quad" has a continuous rating of 520 bhp. and a maximum torque of 900 foot lbs. Under various load conditions one or more of the four units may be de-clutched, thus saving expense. These powerful quads are specifically recommended for deep-well drilling by the manufacturer. Write for Bulletin OFS-1, Detroit Diesel Engine Division, General Motors Corporation, 13400 West Outer Drive, Detroit 23, Michigan.

New Tachometer Bulletin

THE Herman H. Sticht Co., Inc. has recently issued a condensed bulletin showing nine different types of tachometers which can be supplied by the firm.

This bulletin shows a large selection of tachometers including portable and stationary types, single and multiple ranges, domestic and imported Swiss tachometers. Write to the Herman H. Sticht Co., Inc., 27 Park Place, New York 7, N. Y., for bulletin 1045, and full particulars.


VORTOX
AIR CLEANERS
THE THIRD AND FINAL CLEANING ACTION
OF A VORTOX OIL BATH AIR CLEANER
The smaller, airborne dust particles, not caught in the first or second cleaning action, are filtered through a maze of channels and adhere to the oily surfaces of the coiled springs in the filter element.
These dust particles are carried from the filter element into the settling chamber by the "self-washing" action, which maintains a constant, forcible flow of oil.
Because of cleaning actions one, two, and three, and the additional protection afforded by the pre-filter against entry of lint, no servicing of the main filter element is necessary.
Write for Bulletins F-1295 and F-1297
VORTOX COMPANY
CLAREMONT, CALIFORNIA

Chicago Electric Tachometer Company Issues New Bulletin

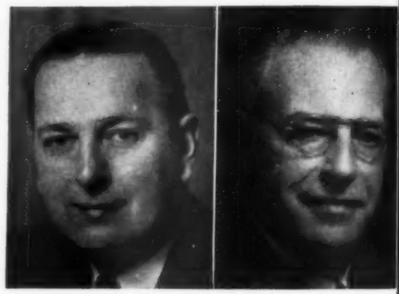
THE Chicago Electric Tachometer Company has issued a new Tachometer bulletin describing the various models now offered. The portable models shown are of special interest as they include the standard 12-pole generator transmitter for steady pointer operation and the circuit-controlling range-changing switch. Further particulars may be had by requesting Bulletin No. 12 from the Chicago Electric Tachometer Company, 800 North Clark Street, Chicago 10, Illinois.

Bunting Brass & Bronze Elects Officers

CHARLES E. BUNTING, formerly president and treasurer, was elected Chairman of the Board of Directors of The Bunting Brass & Bronze Company at the annual meeting of the company Tuesday. George H. Adams, Executive Vice President, was elected President of the company succeeding Mr. Bunting. Walter F. Volk who has been secretary and assistant treasurer was elected secretary and treasurer. R. A. Sevrence was re-elected assistant secretary and assistant treasurer. Other officers of the company are D. McKercher, Vice President; R. R. Hirsch, Vice President in Charge of Sales; and J. S. Tawresey, Vice President in Charge of Engineering. The directors of the company are C. E. Bunting, G. H. Adams, W. F. Volk, J. T. Rohr and B. B. Bunting.

Former Officers Head H. O. Penn Machinery Company

FOLLOWING the untimely passing of Hamilton O. Penn, the controlling interests of the H. O. Penn Machinery Company, Inc. of New York have been acquired equally by Ralph L. Johnson and Stuart A. Wade, both of whom have been with the company for more than a decade. The changes in the Official Staff are: President, Ralph L. Johnson; Executive Vice President and General Manager, Stuart A. Wade; while the other officers remain the same, namely, Secretary, Horace C. Ruggles and Treasurer, Harriet Plotkin.



Ralph L. Johnson *Stuart A. Wade*

Mr. Johnson spent several years selling heavy machinery in the Eastern part of the United States before joining the Penn Organization some twelve years ago. After outstanding work as a Sales Engineer, he became Sales Manager, Secretary and then Vice President of the company, which he now heads.

Mr. Wade joined the H. O. Penn Machinery Company ten years ago and his work as a Sales Engineer in New York City, Westchester and Rockland Counties soon led to his appointment as Second Vice President. In addition to his new duties as Executive Vice President of the parent company, Mr. Wade will continue as General Manager of the Newington, Conn., division.

Frank E. Ross, Jr., Assists John W. Barriger III

FRANK E. ROSS, JR., former government Diesel locomotive expert, has been appointed to assist John W. Barriger III, present manager of Fairbanks, Morse Diesel locomotive department.

The constant, terrific pounding of powerful pneumatic impact drivers require sockets with rugged stamina far beyond that offered by ordinary sockets.

Snap-on impact sockets are *made for the job!* Special alloy steel and correct heat treatment provide utmost durability. Accurate fit and dependable locking devices contribute to speed and safety.

Snap-on impact sockets are widely used in manufacturing plants, railroad shops, shipyards, power plants . . . wherever top wrench performance is required. Available in 3/8", 1/2", 5/8", 3/4", 1" and 1 1/2" square drives with a full range of hexagon and square wrench sizes from 5/16" to 4 3/4" in standard length and bolt clearance types. Write for special catalog M46 describing the complete range of Snap-on impact sockets.

SNAP-ON TOOLS CORPORATION
8106-E 28th AVENUE KENOSHA, WISCONSIN

Frank E. Ross, Jr.

Mr. Ross, who has worked in the field of Diesel Railroading since 1940, left the Terminal Railroad in 1944 to serve on the United States Railway Mission in Mexico. There he established a complete program for the servicing, operating, and maintaining of all the Diesel-electric rail equipment owned by Mexico. In 1945 Mr. Ross returned to the Terminal Railroad and later accepted his new position with the Fairbanks, Morse & Co.

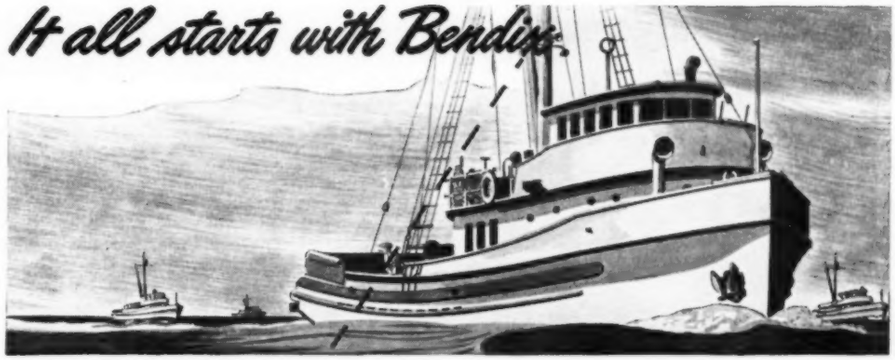
Air-Maze Announces Changes in Sales Staff

AIR-MAZE Corporation of Cleveland announces the resignation of Jules Gratiot and the appointment of W. B. Watterson as sales manager of the corporation. Mr. Gratiot has resigned to become direct factory representative and field engineer for the company in the states of California and Arizona.

Jules Gratiot *W. B. Watterson*

Mr. Watterson, who has been connected with Air-Maze since 1942 in various sales promotional capacities, has more recently been factory representative for the Ohio territory. Mr. Gratiot, vice-president and sales manager since 1943, was formerly a partner in the firm of Treidler & Gratiot, Air-Maze distributors in Southern California.

It all starts with Bendix



Out of touch with land for months at a time, Diesel-powered commercial fishing craft must be "dead sure" of continuous dependable starting.

—and Bendix Starter Drives provide just that.*

Designed and engineered for compactness, ruggedness, universal adaptability, and simplicity of operation, these heavy-duty Drives have a performance-proven record of many years of dependable service on land and sea.

For heavy-duty Starting—marine, automotive and industrial—Bendix is best.

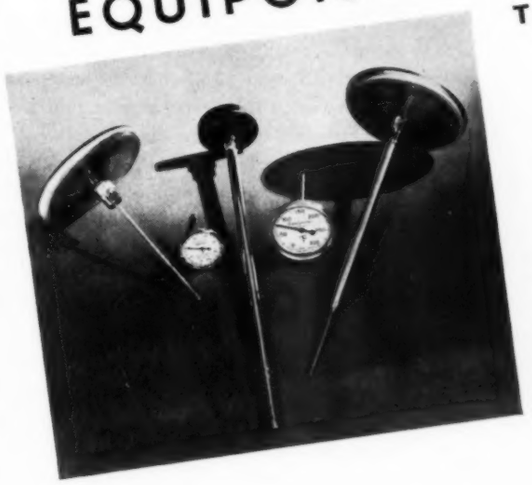
*REG. U. S. PAT. OFF.

Bendix Drive

ECLIPSE MACHINE DIVISION
Division of Bendix Aviation Corporation
ELMIRA, NEW YORK

PRODUCT OF Bendix AVIATION CORPORATION

EQUIPOISE Bimetal THERMOMETERS



Employs the special tooling and experience gained in making thousands of the same type instruments for the Army Air Forces. Meets industry's demand for greater sensitivity and accuracy. Many standard ranges are available between the limits of —90°F. and 1000°F.

- Easy to read dial
- Instantaneous response
- Only one moving part
- High over-range protection
- Individually and permanently calibrated
- No pinions, gears or linkages
- Calibration unaffected by vibration
- Durable stainless steel case, connection nut and stem
- Available with tempered, non-breakable crystals
- Available in 2, 3 & 6 inch dial sizes
- Heavy duty sockets are standard
- Low cost—no maintenance

EQUIPOISE CONTROLS

100 Stevens Ave. Mt. Vernon, N. Y.

BALANCING
- FAST
- ACCURATE

This 250-pound blower fan is being balanced to a 1 ounce inch on a HI-EFF Balancing Machine. The same Balancer is used for a wide variety of pieces up to 1200 pound size. It provides rapid balancing with accuracy indicated by the following tolerances:

Pieces weighing 500 to 1200 pounds, within 2 oz. inches
Pieces weighing 75 to 500 pounds, within 1 oz. inch.
Pieces of lighter weights to diminishing tolerances down to .02 oz. inch.

HI-EFF Balancing machines are available in 5 sizes with work piece diameters up to 48 inches. These may be equipped with *HI-EFF* Hand Weighing Mechanism (as shown) or *HI-MAX* Direct Reading Mechanism. Write for folder "Balance Your Product." Taylor Manufacturing Co., 3082 W. Meinecke Ave., Milwaukee 10, Wis.

TAYLOR OF MILWAUKEE

MANUFACTURERS OF "HI-EFF" HYDRAULIC DYNAMOMETERS — STATIC BALANCING MACHINES — SENSITIVE DRILLING MACHINES

Cooper-Bessemer Manager Views The Future of Diesels On Inland Waterways

SO long as inland waterways towboats and barges can move coal by river 950 miles for two dollars a ton as compared with $5.72 per ton over the same distance by rail, America's Inland Waterway System will continue to do a big hauling business and the gradual replacement of the old steamer by modern Diesels will continue at a steady pace, according to Ralph Reynolds of Cooper-Bessemer Corporation.

One important question concerning the future of Mississippi River system is the proposed deepening of the 9 foot channel to 12 feet. If the channel is deepened, the draft limit on the River boats can be extended over the 4 ft. 6 in. presently required and thus would greatly increase the possibility of larger and more powerful tugs and result in larger pay loads.

At the present time, one average-sized Diesel towboat and five 2,000-ton barges are the equivalent of four railroad locomotives and 210 freight cars in carrying capacity. These combinations now haul petroleum products 910 miles by river at a rate of $2.78 a ton as compared with $8 a ton by rail. In view of these and other similar rate comparisons that are available, it is easy to see why there is considerable opposition to the deepening of the 9-foot channels.

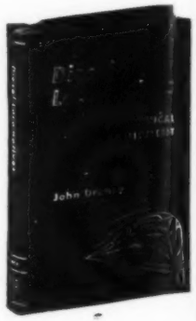
At the present time, on the Mississippi River System there are 185,000 horsepower of steam-operated boats and 160,000 horsepower of Diesel-propelled boats, according to a recent tabulation. Of the steam horsepower, 42,000 is represented by the 21 Defence Plant Corporation boats in operation which would have been Dieselized if engines had been available for use at the time of their construction.

Breaking the figures down further, the tabulation shows that 223 of the steam-powered towboats, ferries and other vessels on inland waterways are using stern wheels, side wheels or center wheels. Fifty-eight of the steam-powered vessels operate by means of screw propulsion. These latter boats are "naturals" for a change-over to Diesel.

At present there are 399 Diesel boats on the Mississippi River System and that figure does not include vessels operating with less than 100 horsepower Diesels.

War traffic, of course, has put new blood in the veins of river traffic. In 1943, the last year for

RAILWAY LOCOMOTIVE ENGINEER ADVISES DIESEL



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The First Books of their Kind.

A practical guide to the operation and maintenance of

RAILWAY DIESEL LOCOMOTIVES

By JOHN DRANEY,

Past President, United Association of Railroad Veterans

in collaboration with Diesel technicians from American Locomotive Co.; Baldwin Locomotive Works; Electromotive Division of General Motors Corp.; General Electric Co.; Westinghouse Electric & Mfg. Co.; and many others.

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388 pages. 235 illustrations. $3.75

Both $7.50 postpaid

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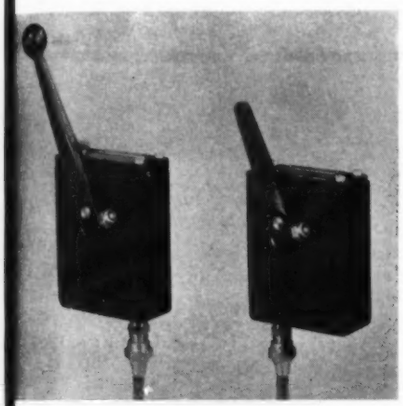
2 West 45th St. New York 19, N. Y.

hich figures are available, the Mississippi and er tributaries carried 127 million tons includ- g 120 million tons of such major commodities coal, petroleum, steel, grain and sugar. bout six million tons were in package freight.

Miniature Hydraulic Control

N almost miniature hydraulic remote con- ol, the smallest of its type and weight yet fered to the industrial market, has been de- eloped by Sperry Products, Inc., long the man- facturers of larger units in this same field. umerous applications are possible including rottle, mixture, governor, and all sorts of osition indicator controls.



New Sperry Products Miniature Hydraulic Control

his new Sperry product is said to retain all he advantages of the previous larger units in hat only a single flexible copper tube is used, he system is completely enclosed, and the in- tallation is easily accomplished with but three mall bolts for each of the two pieces which ake up the complete unit. For full particulars, rite Sperry Products, Inc., 1505 Willow Ave., Hoboken, N. J.

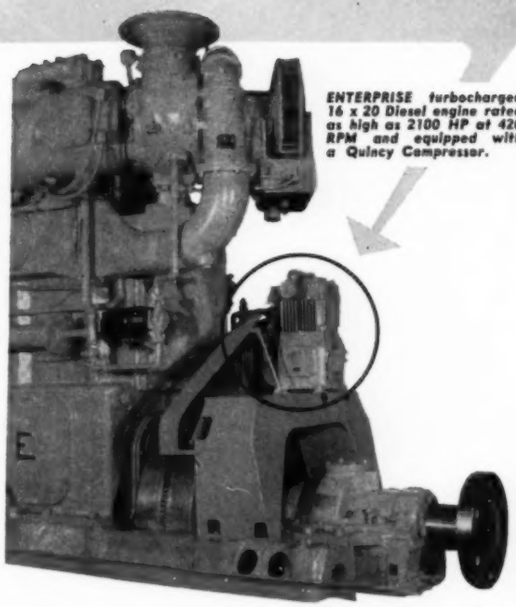
New Model "Clarofier" Announced by W. G. B. Oil Clarifier Inc.

DDING to their long line of fuel and lube il clarifiers the W. G. B. Oil Clarifier Co. of ingston, N. Y., has announced its C. T. Model. he new model is equally efficient for lube and uel oil and utilizes separate filter elements for oth types of oil. When lube is to be filtered governing orifice is placed in the inlet but hen used for fuel this orifice is removed for ast flow to permit the filter to accommodate il at filling station pump speed. This innova- ion has resulted from the fact that Diesel oper- tors are now finding it advantageous to filter ll fuel oil as it is delivered to the vehicle, thus voiding dirty fuel and resulting injector rouble.

Quincy COMPRESSORS for DIESEL STARTING

Choice of Leading Diesel Engine Makers

DEPENDABILITY and compactness are compressor *"musts"* when Diesel engines are started by air power. Quincy offers a line of advanced design air compressors that are easily installed as an integral part of Diesel equipment. They can be relied upon for *dependable* starting power over a long, trouble-free service life. Sizes available from 1 to 80 cu. ft. displacement. Pressures up to 500 lbs. p.s.i. A Quincy compressed air specialist is ready to serve you. Ask him about your air problems.



ENTERPRISE turbocharged 16 x 20 Diesel engine rated as high as 2100 HP at 420 RPM and equipped with a Quincy Compressor.

QUINCY COMPRESSOR CO.
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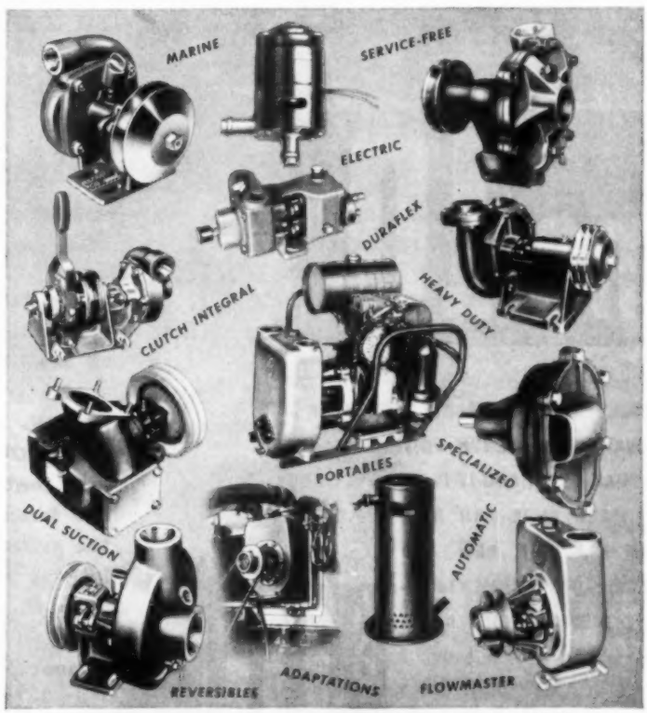

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Volume 10

THOUSANDS BUY THE DIESEL ENGINE CATALOG EACH YEAR — THOUSANDS MORE WILL WANT THIS TENTH EDITION BECAUSE THEY WILL NEED IT MORE THAN EVER, AND IT IS THE ONLY BOOK OF ITS KIND PUBLISHED. MAKE SURE YOU HAVE UP-TO-THE-MINUTE INFORMATION ON ALL THE NEW AND VITALLY IMPORTANT DIESEL DEVELOPMENTS — ORDER YOUR COPY OF THE DIESEL ENGINE CATALOG, VOLUME 10, *TODAY*.

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Here is the book you have bee looking for — a book you nee now and will use throughout th coming year. Not a book to read and la aside — but one to which you will fre quently refer; — Design and operatin engineers, Diesel students, purchasin and sales executives — in fact all who ar interested in Diesel engines, accessories and plant equip ment, keep The DIESEL ENGINE CATALOG within reac all the time — because it is the Diesel "bible", a big boo — 10⅛" x 13½" — 530 Pages and a really big valu Rex W. Wadman, editor, conceived the DIESEL ENGIN CATALOG as a "Cross Section of The Diesel Industry" — just that; and through ten consecutive editions the boo has been greatly expanded each year to keep pace wit the rapid growth of the Industry. This 10th edition, th largest and most complete of all, carries descriptions o more than 300 American-made Diesels with a large sectio devoted to Diesel engine accessories and plant equipment— a most useful and indispensable book.

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Clinton E. Stryker Heads Adel Precision Products Corp.

CLINTON E. STRYKER of Milwaukee, Wisconsin, was recently elected president and general manager of Adel Precision Products Corp., of Burbank, California, according to an announcement by Henry S. Wright, chairman of the Adel Board of Directors.

Clinton E. Stryker

Mr. Stryker was formerly vice-president and assistant to the president of the Nordberg Manufacturing Company and before that was a partner with McKinsey, Kearney & Company, management consultants of Chicago. He is a graduate of Armour Institute in Chicago. He has a broad experience in scientific management, engineering and manufacturing.

Adel Precision Products Corp., a major manufacturer of hydraulic equipment for allied aircraft during the war, is now manufacturing an ISOdraulic Remote Control system for operating marine clutches, throttles and steering mechanisms, and other hydraulic units.

Aleo Appoints Don Campbell

APPOINTMENT of Don Campbell to the public relations staff of the American Locomotive Company has been announced by Lynn Mahan, assistant to the president in charge of public relations. Mr. Campbell was recently placed on inactive status after service as a senior lieutenant in the Pacific with the United States Navy. Prior to joining the Navy, Campbell was copy desk chief of the Miami (Fla.) Herald, and before that had been day news editor of the Detroit Free Press.

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DC generator (left) two - bearings, self excited type. Can also be furnished with direct connected exciter. Both AC and DC generators can be furnished in the single bearing, flange-mounted type for special mounting requirements. Ball bearing construction is used throughout. Complete data upon request.

Illustrated are AC generators, only 2 of the many different types developed and designed to fit specific needs and applications. (upper left) two-bearing self-excited type; (lower right) two-bearing, direct connected exciter type.

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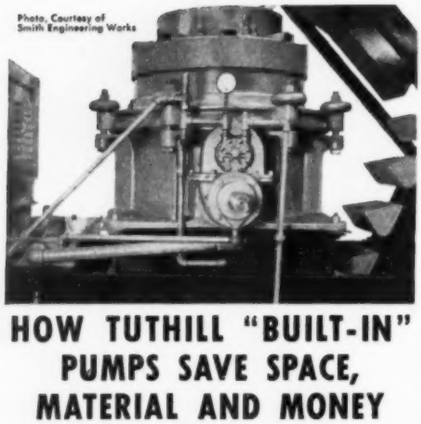
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New Booklet on Dryseal Pipe Threads

AN eight-page booklet containing information on the recently set up standard for improvement in pipe threads, known as Dryseal Pipe Threads, has now been made available by the Weatherhead Company. This company also announces that all Ermeto, inverted S.A.E. and compression tube fittings using a pipe thread on some portion of the fittings, will henceforth be supplied with Dryseal Pipe Threads. This is being done to conform to the adoption of Dryseal pipe threads by the automotive industry as standard on tube fittings.

The Dryseal booklet contains information which explains what Dryseal pipe threads are, how they work, and recommended practices. It also carries charts and drawings which will be found interesting to engineers, designers and purchasing agents. A copy of the booklet can be obtained by writing The Weatherhead Company, 300 East 131st Street, Cleveland 8, Ohio.

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WEST COAST DIESEL NEWS

By FRED M. BURT

A 44-ft. shoreboat completely sided with four giant panels of waterproof plywood is a successful accomplishment of San Diego Marine Construction Co. She is powered by a 6-cylinder 125-hp. Cummins Diesel with Twin Disc reduction gears.

FIRST boat so-powered on San Francisco Bay is the 65-ft. tug *Intrepid* with General Motors Twin Diesel Marine unit, owned by Crowley Launch & Tugboat Company.

SWALEY, a 40-ft. fish boat of welded steel, has for propulsion power a 60-hp., 6-cyl. Caterpillar Diesel with 3-to-1 Twin Disc reduction gears. Built by Harbor Steel Fabricators, San Pedro, designer A. J. Ghiloni.

THE Olson Tug Boat Co., Tacoma, 45-ft. tug *Magnolia*, is being repowered with a 171-hp. Buda-Lanova Diesel, replacing another Buda.

A PAIR of 90-hp. 6-cyl. 5½ in. x 7½ in. Fairbanks-Morse Diesels were installed in the Vanderbilt yacht, *Pioneer*, at Newport Harbor, Calif. in February. Used for auxiliary work, they are direct-connected to 60-kw. generators.

HODGSON, Greene, Haldeman of Long Beach are building a 123-ft. wooden tuna clipper to be powered with a Fairbanks-Morse, 6-cyl. 540-hp. Diesel. They will also construct 30 pleasure and 2 State boats, many of which are to be Diesel.

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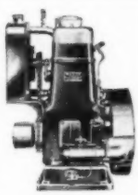
The reliable WITTE Diesel Engines and Diesel-Electric Plants known the world over are in volume production. Engine sizes from 2 to 12 H.P. Dieselectric Plant sizes 3 to 10 KVA.



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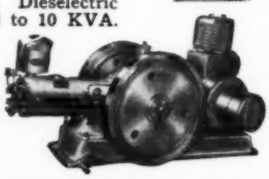

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AL LARSON, Terminal Island, is building an 82-ft. wooden tuna clipper for stock, that will be powered with a 250-hp. Atlas Diesel.

TWO 105-ft. tuna clippers, being built by National Iron Works, San Diego, G. Bruce Newby design, will each be powered with a 550 hp. Atlas-Imperial supercharged Diesels Each will have two 120-hp. Atlas Diesel auxiliaries.

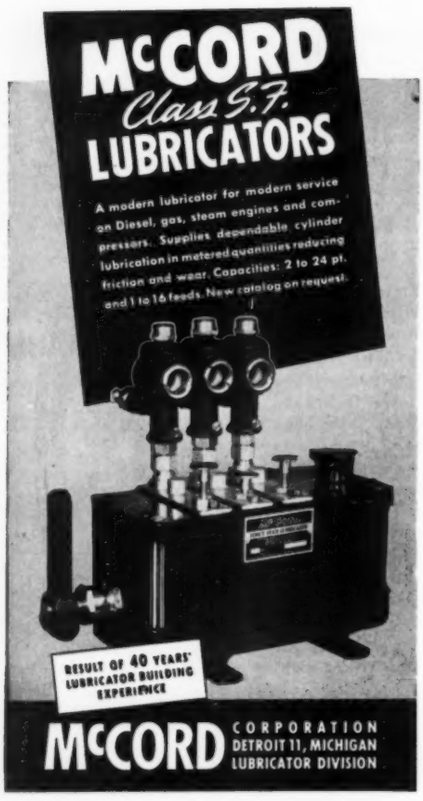
WOODEN fishing boat *Victoria* being built by W. L. Olsen, San Pedro, for his own account, will be 48-ft. long and powered with a 60-hp. Atlas Diesel.

FIRST big, North Atlantic type steel trawler to be built on the Pacific Coast, is being built by Birchfield Boiler, Inc., Tacoma, for Deep Sea Trawlers, Inc. Designed by Coolidge, Hart and Brinck, Seattle. It will be powered by a 1200-hp. General Motors Diesel—two other Diesels, auxiliaries, will each turn 60-kw. generators.

PURSE seiner *Cesare Augusto,* owned by John Zuanich, San Pedro, is being repowered with a new 240-hp., 6-cyl. Washington Diesel, purchased from J. T. Siler, Southern California distributor.

DESIGNED by H. C. Hanson, Seattle, being built by Weldit Tank and Steel Works, Bellingham, Wash. are two 40-ft. tugs to be powered with Caterpillar Diesels; and two 80 ft. x 24½ ft. x 4½ ft. power scows to receive twin Buda Diesels of over 100-hp.

AN 80 ft. x 24 ft. x 6 ft. power scow with two 125-hp. Cummins supercharged Diesels, for Libby, McNeil, & Libby Alaska operations is being built in Astoria by Columbia River Packers Association, in their yard.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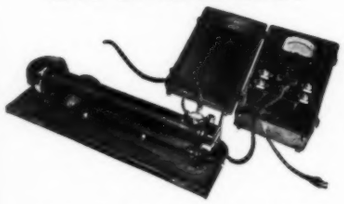

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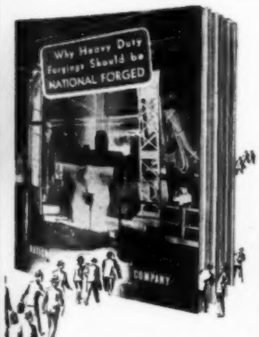

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"WE MAKE OUR OWN STEEL"

WOODEN tuna clipper *Julia B.*, Capt. Al Santos, San Diego, one of a long series built by Lynch Shipbuilding Co., San Diego, is 104-ft. long and powered with a 400-hp., Enterprise Diesel. For auxiliaries, there are two 125-hp., 5-cyl. Lorimer Diesels direct-connected to 75-kw. Fairbanks-Morse generators.

THE $225,000 103-ft. wooden tuna clipper *Sharon Gale*, from San Diego Marine Construction Co., is driven by a 320-hp., 6-cyl. Atlas Imperial Diesel; auxiliaries are two 80-hp. Atlas Diesels, direct-connected to 40-kw. D.C. Westinghouse generators.

SIXTY-FIVE ft. x twenty-one ft. eight in. power scow by Hydraulic Supply Co., Seattle, will be powered with twin 100-hp. Superior Diesels. It will be used at the Libby, McNeil & Libby, Kenai cannery.

BUILT upside down and prefabricated at United Concrete Pipe Corp., Long Beach, a 60 ft. steel combination shrimp trawler for Mexican interests. It has for main power a 130-hp., 3 -cylinder Superior Diesel; auxiliary a General Motors, Series 71, 30-hp. Diesel.

NINE Diesel coastal cargo vessels of the C1-M-AV1 have been authorized for Pacific coastwise service, by the War Shipping Administration. This is expected to alleviate greatly the car shortage in the Pacific Northwest.

NEGOTIATIONS between the French Government and Kaiser Co. Inc., are reported, for the construction of six small cargo vessels at the Swan Island yard, Portland, Ore. They will be 260-ft. Diesel coastal vessels of 2905 tons, for French Indo-China.

Diesel Engine Catalog

THE 1945 Edition of the DIESEL ENGINE CATALOG, Volume 10, is still available. It is the largest edition yet published—532 pages, hundreds of illustrations—a *Composite Catalog* of the *Entire Diesel Industry*. Page size 10⅛ in. x 13½ in.—a big book and a real value. A separate section devoted to each manufacturer's line of engines with completely illustrated descriptions and specifications—covering stationary, marine, automotive and railway types. Other sections cover Diesel accessories such as fuel injection equipment, chain and gear drives, electric, hydraulic and mechanical couplings, superchargers and many other items. Also contains a directory of products and manufacturers. An indispensable book for all interested in Diesels. Price $10, postpaid. Order from *Diesel Engine Catalog*, 2 West 45th Street, New York 19, N. Y.

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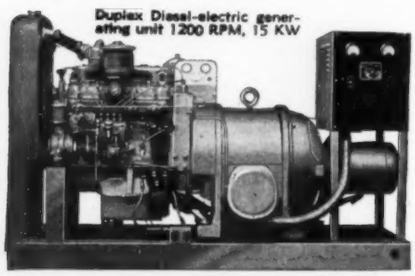

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